

ANNALS OF THE RHEUMATIC DISEASES

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A full summary of his observations and conclusions must be given.

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Articles must be as concise as possible and be typewritten on one side of the paper only, with double spacing and a margin of not less than $1\frac{1}{4}$ inches. Only recognized abbreviations should be used. Graphs, charts, tables, and legends for them should be presented on separate sheets and not included in the text. When half-tone reproduction of x-ray illustrations is required, the author is advised to send the original film unless he wishes to bring out special points in a print of his own choice. Photographs and photomicrographs should be printed on glossy paper, should be larger than the size desired for reproduction, and, if transmitted through the post in a tube, should be rolled with the picture outside. With the exception of letters and numbers, which should be lightly written in pencil, everything that is to appear in the reproduction of a graph or chart should be carefully drawn in black ink on tracing linen, or Bristol board, or stout, smooth, white paper.

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EDITORIAL

The celebration of the tenth anniversary of the foundation of the Empire Rheumatism Council has been marked by the most gratifying evidence of the progress of the Campaign against rheumatic disease, and especially welcome has been the encouragement given by the Minister of Health, the Right Hon. Aneurin Bevan, his Principal Medical Officer, Sir Wilson Jameson, and the Nuffield Trustees. The munificent endowment of the Rheumatism Research Centre at the University of Manchester by the Nuffield Trust has already received notice in the press, both medical and lay, and has been widely welcomed; in addition, the Empire Rheumatism Council has provided two research workers and, through its Scientific Advisory Committee, has planned a scheme for investigation on a wide scale into the causation of rheumatoid arthritis.

The celebrations began with the Annual meeting of the Heberden Society which is closely linked with the Empire Rheumatism Council. This was followed by the Annual Dinner, with the retiring president, Dr. C. W. Buckley, in the Chair. Many distinguished visitors were present, including the President of the Royal College of Physicians, Lord Moran; Lord Horder, the Chairman of the Council of the Empire Rheumatism Council; Professor J. A. Höjer and Dr. B. Strandell, officially representing the Swedish Ministry of Health; Dr. Swaim of the American Rheumatism Association; Major-General Sir A. Biggam; and many others.

The Chairman, in proposing the toast of the "Future of the Campaign against Rheumatism" referred to the origin of the efforts to control rheumatic disease which led to the formation of the Empire Rheumatism Council, and to the distinguished physicians of the past whose work had laid the foundations—Heberden, Haygarth, Scudamore, the Garrods, and, in the present, Lord Horder—to whose foresight and energy the formation and progress of the Empire Rheumatism Council owe so much. He pointed out that, side by side with research into aetiology and treatment, must go education of medical practitioners in the treatment, and of the general public in the importance of the early recognition and care which was as important in rheumatism as in tuberculosis and cancer.

Professor L. S. P. Davidson, in replying, developed the same theme with especial reference to the work which had been done in Scotland and the need to encourage young physicians to specialize in the study of this subject. He was optimistic about the future, and noted that general physicians were becoming increasingly impressed by its importance.

Dr. W. S. C. Copeman, in proposing the toast of the guests, paid tribute to the importance of the

work they had done, especially in Sweden and the United States, and to the Government's gratifying tributes to the efforts of the Council during the past ten years. Dr. Loring Swaim and Dr. Strandell replied.

On the following day a meeting was held to welcome the representatives of the Swedish Government. Lord Horder presided and was supported by His Excellency the Swedish Minister, who introduced Professor Höjer and Dr. Strandell. Professor Höjer then gave an address on the development of the study and treatment of the rheumatic diseases in Sweden, which is reported in full in this issue (p. 183).

A reception was held on October 28 in the Apothecaries Hall, when Lord Horder received the guests. In the unavoidable absence of the Minister of Health he was supported on the platform by the Minister for Agriculture, the Right Hon. Tom Williams; Sir Wilson Jameson, Principal Medical Officer to the Ministry of Health; Air-Vice-Marshal Don; Sir Walter Kinnear; Professor Höjer; Dr. Loring Swaim (U.S.A.); Mr. Izard; and other members of the Empire Rheumatism Council. Sir Wilson Jameson, speaking on behalf of the Minister of Health, made an important speech (which appears at p. 218 of this issue) giving great encouragement to the work of the Council, and showing the interest which is being taken by His Majesty's Government in the campaign against rheumatism. A telegram was read from H.R.H. the Duke of Gloucester, President of the Council. There were also messages from the Dominions and from the American Medical Association and the American Rheumatism Association. The text of the Duke of Gloucester's telegram and of the other congratulatory messages appear at p. 217.

On October 29 a luncheon was given at the Savoy Hotel by His Majesty's Government, with the Right Honourable Aneurin Bevan, Minister of Health, presiding. There were thirty guests, among whom was the secretary of the Nuffield Trustees. The Minister made a speech in which he reaffirmed his intention that rheumatic disease should be one of the principal priorities under the National Health Act, co-equal with tuberculosis, cancer, and venereal disease. The scheme would be on the lines laid down in the E.R.C. publication, *Rheumatism, a Plan for National Action*. He paid tribute to the work of the Council, which had culminated in putting rheumatism on the map with 100% official approval and backing, a record to be proud of. He stressed the need for research, and also for classification of the many disorders grouped

under the term rheumatism. He welcomed the munificent action of the Nuffield Trustees, whose gift of £100,000 for research was of such great importance. There was still much to be done, and he urged the Council to persevere in its work.

The same afternoon a reception was given by the British Council to welcome the Swedish representatives. Two hundred guests were invited and were received by Sir Edward Mellanby of the Medical Research Council. This completed a memorable week-end, a landmark in the history of the Campaign and one full of promise for the future.

During the last few months the Ligue Internationale contre le Rhumatisme has been re-born, and it promises to be a healthier child than ever before. It is truly international, with its President, Dr. Ralph Pemberton, in the United States; its Vice-President, Prof. Kontchabrosky, in Russia; and its secretariat, in charge of Dr. van Breemen, in Amsterdam. In its almost premature fertility it has itself produced three children: a European section, chairman Dr. Mathieu-Pierre Weil; an American section, chairman Dr. R. B. Osgood, and secretary Dr. Loring Swaim; and a British section, chairman Dr. W. S. C. Copeman, treasurer Dr. G. D. Kersley, and secretary Dr. Oswald Savage.

Both the British and American sections have adopted the *Annals of the Rheumatic Diseases* as their official Journal, and we hope that this will be an important step forward in the liaison between English-speaking nations in their fight against rheumatism, and a helpful preliminary to the holding of the greatest Congress of those interested in the subject ever to be planned—the meeting of the whole Ligue in the United States in 1949.

Some editorial explanation is perhaps needed for

the extremely long delay in publication of the September issue of the *Annals of the Rheumatic Diseases* and also for the delay in the appearance of this present issue. It might be thought that the end of hostilities would have brought an improvement in paper supplies, but this has not been the case. Indeed, it is more difficult now than it ever was during the war years to obtain the quality of paper which is necessary for a specialist journal carrying numbers of often very detailed illustrations. The September issue was, in fact, ready for press early in November last, but could not be printed because there was no paper. The contents of this present issue were with the printer by early December, but were delayed for similar reasons. The Editors would like to assure subscribers that everything is being done to bring future issues up to date.

A word should also be said about the cumulative ten-year index which, in an editorial in the June issue, was promised for the end of this year. The index is in course of preparation, but more work has been involved in compiling it than was anticipated; this fact, together with paper and printing difficulties, has made it necessary to postpone publication.

The abstracting service now established by the British Medical Association under the general supervision of the Editor of the *British Medical Journal* will be supplying the *Annals of the Rheumatic Diseases* with an abstracting section, as from the March issue of 1947. This section will contain informative abstracts from the world's medical literature. The inclusion in it of titles of articles not abstracted will, it is hoped, make it a complete record of current literature on the rheumatic diseases, which will be of the greatest value to all students of the subject.

ORGANIZATION OF RHEUMATISM RESEARCH AND TREATMENT IN SWEDEN*

BY

J. AXEL HÖJER

As I understand the term, "rheumatism research" includes clinical investigation for further differentiation, and search for the aetiological factor or factors in acute rheumatic fever and chronic arthritis. "When this factor is discovered and established", says an old textbook, "it should be easy to determine its precise relations to the fairly well studied lesions in several organs." Unfortunately, we know too little to say much about it. In Sweden we thought that in present circumstances we could do nothing better than build an institute for research. This institute, which we hope will open early in 1948, is called "The Institute of Gustav V for Research into the Chief Invaliding Diseases, especially Rheumatism and Poliomyelitis".

It must be admitted that some workers in Sweden are of the same opinion regarding this question as the Secretary of the Medical Research Council, Sir Edward Mellanby. In an Harveian Oration, delivered at the Royal College of Physicians of London in 1938, Sir Edward said: "It will thus be seen how it comes about that the Medical Research Council has not usually adopted the practice of making an organized attack on special diseases except when the problem has developed as part of a larger and more general investigation. It has not, for instance, made a mass attack on such important diseases as rheumatism in its many forms and cancer, although, of course, in both instances it supports a good deal of research by different individuals. It considers that it would be relatively unprofitable to spend the large part of its total resources necessary for the adequate study of these diseases at the expense of other work. Extensive *ad hoc* research on a disease like rheumatism, however important as a practical problem, is apt to be unprofitable until the master key of its aetiology or some other essential fact has been disclosed. This master key is just as likely to be discovered by the use of the experimental method over a wide field as by the direct study of a particular disease where the experimental method is hardly available at present."

I hope that Sir Edward, my friend since the congress of physiology in Stockholm in 1925, does not mind me arguing a little in the opposite direction, as indeed he does himself on the following pages of his oration. Sir Edward was working at that time on rickets, I myself on scurvy, and there were

many threads connecting these two deficiency diseases with the problem of vitamins. Similarly, from rheumatism as a clinical disease there are fine rootlets leading down to the origin of the evil. Laboratory research devises new methods which are necessary if such work is to be pursued to its conclusions, but these methods must be applied to the clinically diseased patient. By following the small but important and often long overlooked clinical features, the research worker may get inspiration.

Research

Fig. 1 shows the front view of the Research Institute at the Caroline Hospital in Stockholm. The Institute is situated between the rheumatism wards of the Caroline Hospital and a park. On the park side is an animal house. The Institute has three floors, one bacteriological, one biochemical, and one physiological, with rooms for twenty-two scientific workers. We aim to provide good modern experimental facilities. Figs. 2 and 3 show the first and third floors. You might say we are starting at the wrong end, no institute being useful in itself if competent research workers are not there. I am glad to say that there are many young scientists already waiting for laboratory facilities so that they can begin work under Professors Nanna Svartz and Hilding Berglund. This year we have founded a Scientific Association as a section of the Swedish Medical Association, to bring together rheumatologists from different quarters and to unify laboratory and clinical research. Further, the Swedish Medical Research Council, a later copy of the British M.R.C., the honoured mother of Research Councils all over the world, has elected a special sub-committee to institute further research into rheumatism and to arrange for co-ordination. Members of this committee are, besides Professors Svartz and Berglund, Prof. Odin of Gothenburg, and Assistant Prof. Jonsson of Stockholm, the latter being first assistant to Prof. Kahlmeter. For virus research we have the institute of Svedberg and Tiselius in Uppsala, and we propose to build another at Stockholm for Dr. Gard, in connexion with the State Bacteriological Laboratory.

In spite of the wonderful scientific results of the war, which extended to medical research as well as to other fields, I am not among the administrators who think it possible to claim final results from science in fixed terms. It may be more difficult to

* Summary of a lecture given before the Empire Rheumatism Council on October 26, 1946.



FIG. 1.—Front view of the Research Institute at the Caroline Hospital.

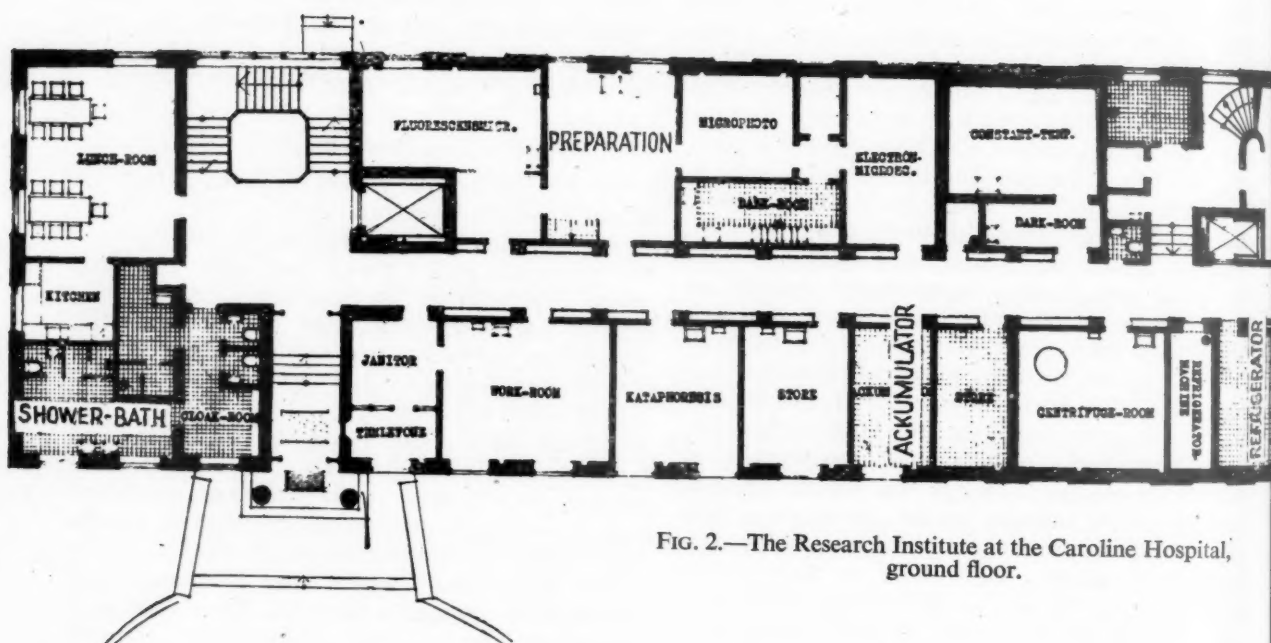


FIG. 2.—The Research Institute at the Caroline Hospital, ground floor.

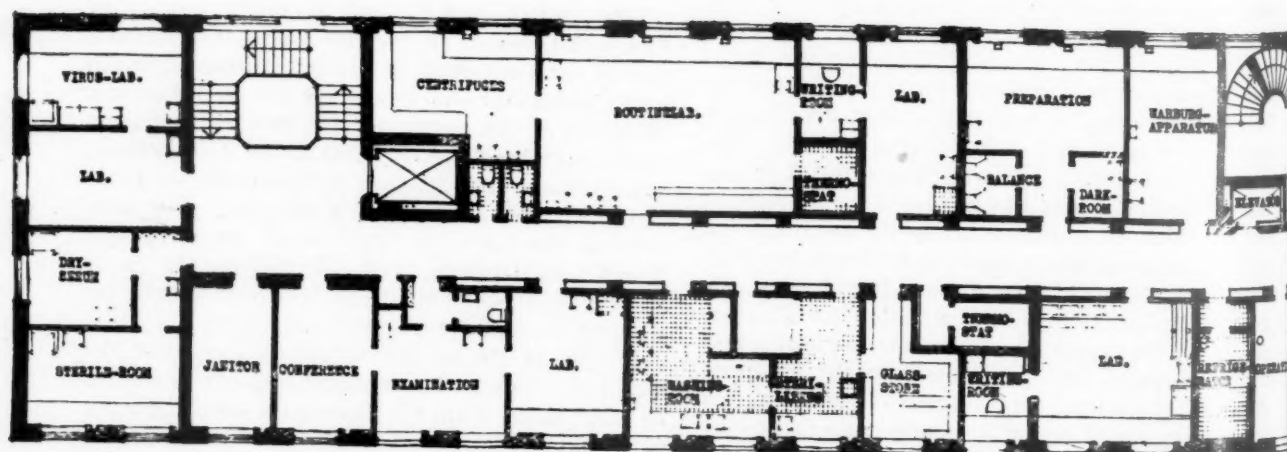


FIG. 3.—The third floor.

discover the rheumatic virus or other factors connected with rheumatism than it is to invent the atom bomb. Our means in Sweden are modest; they will be increased if, as I hope, English scientists come and take part in the team work of our institutes. The most important fact is that this work shall be co-ordinated with other work on problems of rheumatism which is going on all over the world.

May I explain in a few words the name of the Institute of King Gustav V, because there is a little cultural history connected with it. The people collected 5 million "kronor," £300,000, in celebration of the eightieth birthday of the King. The same had been done to celebrate his sixtieth and seventieth birthdays. The first jubilee fund gave us the first tuberculosis sanatorium, the second the radiological centre, the Radium Home in Stockholm to fight cancer. Then came the turn of rheumatism. Our King is eighty-eight now, but I am not sure we shall get any more medical centres in this way. The liaison between science and the State is on the way to being more officially acknowledged in Sweden. The money for science is, I think, coming in more regular ways. We have the word of our new Premier, Tage Erlander, that we shall have State money for the yearly budget of the Institutes. In fact, having until recently counted expenditure for science in thousands of "kronor", the Swedish State is just beginning to count in millions.

Treatment

At the beginning of this century we started in Sweden to discuss the arranging of special rheumatism wards. The names of Dr. Hedenius and Dr. Kahlmeter are to be remembered in this connexion. Between 1920 and 1930 we built between 800 and 900 beds in nine different institutions. The first three of these institutions (Nynäs, Figs. 4, 5; Åre, Figs. 6, 7†; Tranås) were placed in isolated regions far from the centres. At this time such placement was also the rule for tuberculosis institutions and for psychiatric and epidemic hospitals. Even small institutions—for the chronic sick, epidemic diseases, tuberculosis, and so on—were distributed all over the districts, so that the patients should not be too far from their homes. Soon there came a trend toward centralization, and now most of the more remote hospitals are everywhere being brought to the central county hospital, in the shape of psychiatric wards, infectious disease wards, tuberculosis wards, and rheumatism wards. No isolated rheumatism institutions have been built in Sweden since 1925. Instead, since 1925, six hospitals have been built as parts of the departments of internal medicine (Norrköping, Fig. 8†; the others are similar). The chief physician of the general hospital medical wards also controls these rheumatism wards of between 50 and 60 beds. Lund is the only place where there is a special assistant chief for the rheumatism wards (Assistant Prof. Edström).

The therapy in these wards has varied with the chiefs, one preferring gold, another the sulpha drugs,

and so on. Sometimes, I am afraid, treatment has been rather routine, every second day physical therapy, the other, rest—just as the rheumatic patients are treated in summer sanatoria. According to Prof. Kahlmeter, the results are excellent, a majority of the patients returning to work or at least having their invalid pensions postponed. I am not convinced, however, that administrative figures give a complete picture of the real medical results. The invalid pension may be postponed, but how about the rheumatism? Nevertheless, I am sure that these hospitals have done a very good work, especially for the chronic forms of arthritis. They are, in fact, necessary.

Planning

Since 1930 we have not ceased planning and re-planning through Royal committees. The first plan of 1934 comprised 9 new special wards with 656 beds. This plan was not realized. The next committee began to function in 1937, and proposed, in 1941, 21 new wards with nearly 1,300 beds. This plan was not realized either, the counties asking for more State money and the internists for more beds for acute cases. Then the war came bringing some 200,000 refugees. For all cases we built quite a lot of emergency wards, but their standard did not allow them to be incorporated in our regular hospital system. We continued planning, and the plan of 1945 proposed 2,000 new beds for rheumatic patients. This proposition was based on reports from Swedish practitioners concerning all rheumatic cases observed by them in 1943. I should like to give you some figures from this review. The committee consisted of Prof. Nanna Svartz, Caroline Institute, Assistant Prof. Edström, Lund, one surgeon, Dr. Petterson, from Uppsala, two politicians, and, as Chairman, myself. Nearly 1,400 physicians reported. This is 76% of all who ought to have done so. Cases reported numbered 66,000, representing 61,000 patients, half of them men, and half women. The statistician thinks that this represents three-fifths to three-quarters of all rheumatic patients seeing a physician in 1943. The committee believes that 1½% of the people of Sweden visited a physician in 1943 for rheumatic diseases, and that for the same cause ½% were in need of hospital care this year. The number of patients treated in hospitals has been checked by a special report from all hospitals.

Distribution of Cases

The patients were reported in four groups. Group I consists of cases of acute arthritis, Group II of chronic arthritis. Group III is made up of patients with arthrosis, with degenerative changes; and Group IV comprises all other cases which are generally classified as rheumatism, fibrositis, sciatic neuritis, spinal defects, all sorts of inflammatory processes in muscles, and so on. Fig. 9 shows the age distribution of patients reported to be in need of hospital care, a total of 28,000, or 46% of all rheumatic patients. The median age is the age of a

† See p. 197.

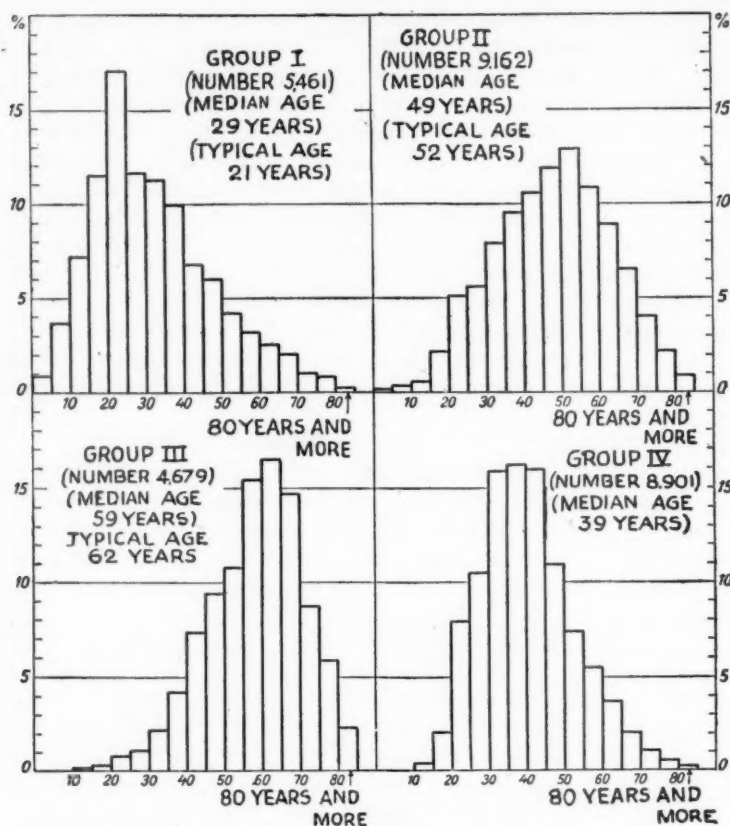


FIG. 9.—Age distribution of patients reported to be in need of hospital care, a total of 28,000, or 46% of all rheumatic patients.

patient who has as many younger patients on the one side as older patients on the other. The typical age is the biggest year group. A very low proportion, 5,461, or 68% of all patients with acute arthritis, are reported as in need of hospital care. The median age is 29, the typical age 21. The typical and median age for chronic arthritis patients, of whom 57% are reported in need of hospital care, is about 50; for arthrosis, of whom 42% are reported as in need of hospital care, about 60 years. For group IV, which contains all "rheumatic" diseases other than groups I to III, 34% are reported in need of hospital care, with a median and typical age of about 40.

Fig. 10 shows the cases grouped according to age, in five-year groupings per thousand of the population. The same age distribution can be observed: acute arthritis with its peak in the twentieth year;

chronic arthritis with the peak much later, after 50 for women and after 60 for men; arthrosis with its maximum after 60 or 70 years. In fact, the figures increase with age, but the oldest age-groups are not reported. Fig. 10 gives the age-incidence of patients treated in hospitals. The age-incidence for the onset of the disease is given by Edström after local investigations. The figures are very alike, which would mean that the early stages of rheumatic diseases dominate in the hospitals.

Hospital Accommodation

Fig. 11 shows in the white columns the number of cases in need of hospital care who really got such care. About 15% of the acute and chronic cases and of the arthrosis cases were entered for admission to hospital but could not be found beds. About an additional 10% of the acute cases, and nearly 20% of the chronic cases in need of hospital care were not sent to hospital at all. The cause was very often that the doctor knew there was no chance. Fig. 12 shows that, out of the acute cases cared for in hospitals, 90% were found beds in general hospitals, whereas less than 10% were cared for in the special rheumatism wards of the Pension Board. Even the majority

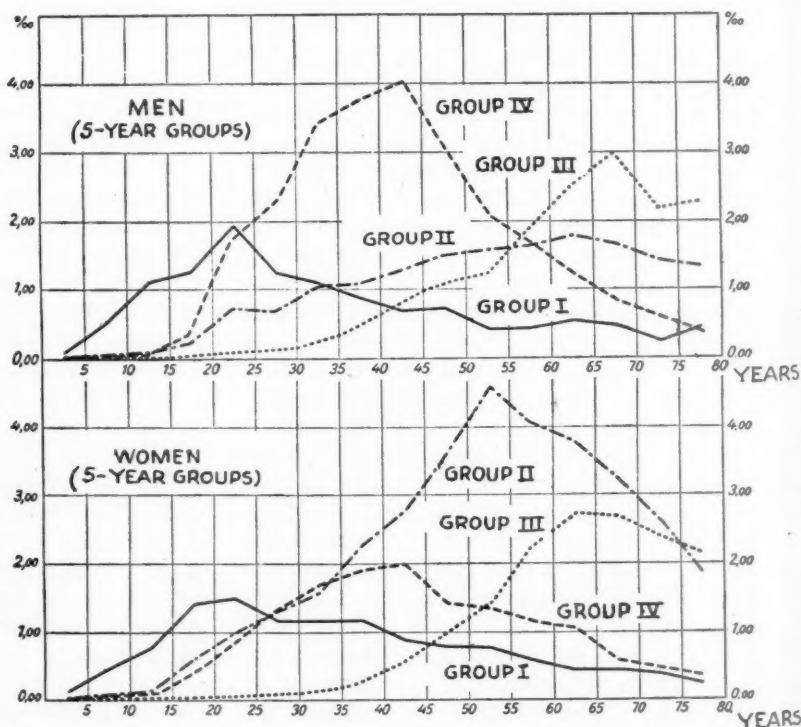


FIG. 10.—Rheumatic patients in different groups, reported to be in need of hospital care during 1943, per thousand of the estimated population in different ages.

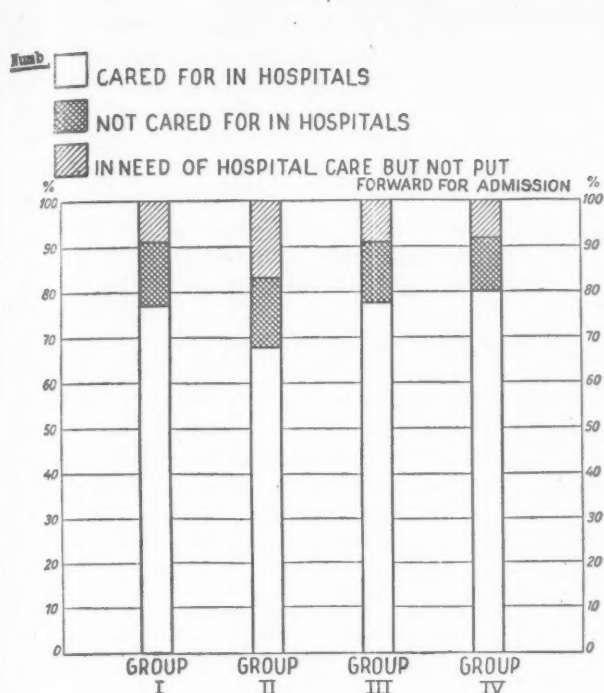


FIG. 11.—Percentage of reported rheumatic patients in need of hospital care, 1943.

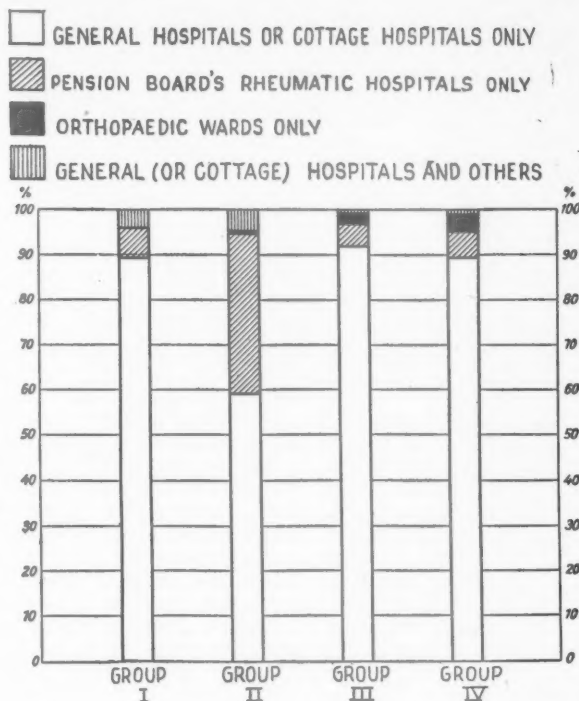


FIG. 12.—Percentage of rheumatic patients cared for in different kinds of hospitals during 1943.

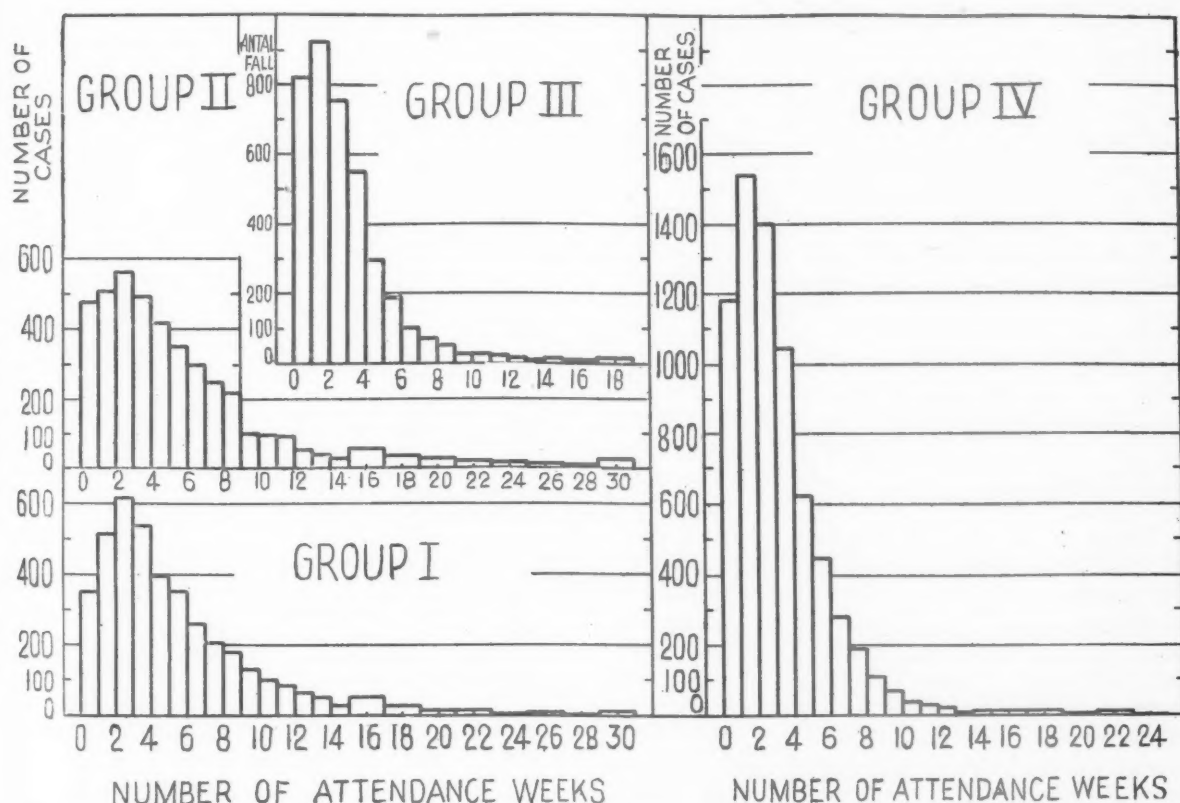


FIG. 13.—Rheumatic patients in hospitals, cottage hospitals, and orthopaedic hospitals (except the Pension Board's hospital wards) discharged during 1943, showing length of stay in weeks. Group I: Number of attendance days, 141,518; number of cases, 4,047; attendance days, average 35, median 29, typical 19. Group II: Number of attendance days, 148,171; number of cases, 4,152; attendance days, average 36, median 29, typical 19. Group III: Number of attendance days, 81,692; number of cases, 3,872; attendance days, average 21, median 17, typical 12. Group IV: Number of attendance days, 153,520; number of cases, 7,039; attendance days, average 22, median 19, typical 12.

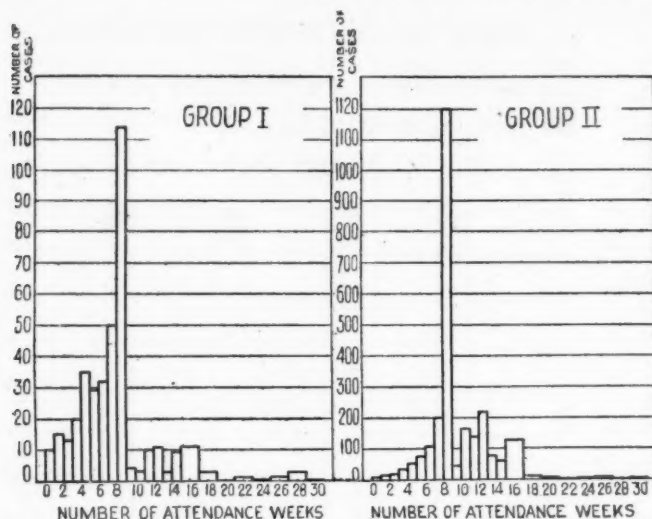


FIG. 14.—Cases of acute and chronic arthritis (groups I and II) in the Pension Board's hospital wards and rheumatism hospitals, discharged during 1943, showing length of stay in weeks. Group I: Number of attendance days, 25,278; number of cases, 411; attendance days, average 62, median 57, typical 59. Group II: Number of attendance days, 172,577; number of cases, 2,580; attendance days, average 67, median 62, typical 59.

of the chronic cases, some 60%, were cared for in general hospitals, 35% in special institutions.

Fig. 13 gives the duration of hospital care. For acute cases the typical stay was 19 days only, the median 29. For chronic cases in general hospitals the figures are the same, 19 and 29 days. For groups III and IV, the median stay is 17 and 19 days, the typical stay 12 days. This period is also very short. Fig. 14 shows that in the wards of the Pension Board the majority of acute and chronic cases have a stay of 2 months, some of them 3 and 4 months. After numerous discussions we have come to believe that the average stay for acute cases should not be less than 60 days, and for chronic cases not less than 90 days. For arthrosis and for the mixed group we think 40 days a reasonable stay. If you increase these periods by weeks, the number of beds needed goes up by hundreds and thousands. For a stay of 1 month longer for cases of acute and chronic arthritis, 3 months in all for acute, and 4 months for chronic cases, you need approximately a thousand more beds.

Table 1 shows the number of civil rheumatic cases in different types of hospitals from 1936 to 1941. The number of patients totalled between 25,000 and 27,000 per annum. Table 2 shows the number of hospital beds which during the whole year 1943 were occupied by rheumatic patients. The total number of beds available for rheumatic patients this year was 2,100, of which 650 beds were in the special wards of the Pension Board and 1,500 in general hospitals, not counting the small homes for chronic sick, into which a number of chronic rheumatic patients find their way. The total number of patients with arthritis (I and II) was only a little greater than the total with arthrosis and miscellaneous complaints (III and IV), but as they stayed longer they occupied a double number of beds.

Table 3 shows the total number of beds required, the number existing, and the deficit. We can see that the beds for acute cases must be doubled and so must the beds for chronic cases. The deficit for chronic cases is three times as great as for acute cases. The beds for acute cases will be provided by dividing up small general hospitals with a surgeon as chief, and adding internal wards with a physician as chief, reserving some of the new beds for rheumatic cases. I think this will be done in the next few years. Even many chronic cases will be taken care of at the general hospitals, but beds for such cases will also be provided in special wards. As a beginning the last parliament allotted money for some 300 beds in special wards, this being two thirds of the planned number. Means for providing more beds will be decided upon when a committee on orthopaedic care in county hospitals has finished its work. In every hospital where there are

TABLE 1
NUMBER OF CIVIL RHEUMATIC CASES IN DIFFERENT KINDS OF HOSPITALS DURING THE YEARS 1936-1941

Groups	Number of civil rheumatic cases admitted to all hospitals					
	1936	1937	1938	1939	1940	1941
I	4,718	5,099	5,430	5,346	5,348	4,911
II	8,490	8,692	8,920	8,756	8,762	9,257
III	6,084	6,615	7,163	6,564	6,016	6,726
IV	5,727	5,498	6,359	6,559	6,532	6,372
Total	25,019	25,904	27,872	27,225	26,658	27,266

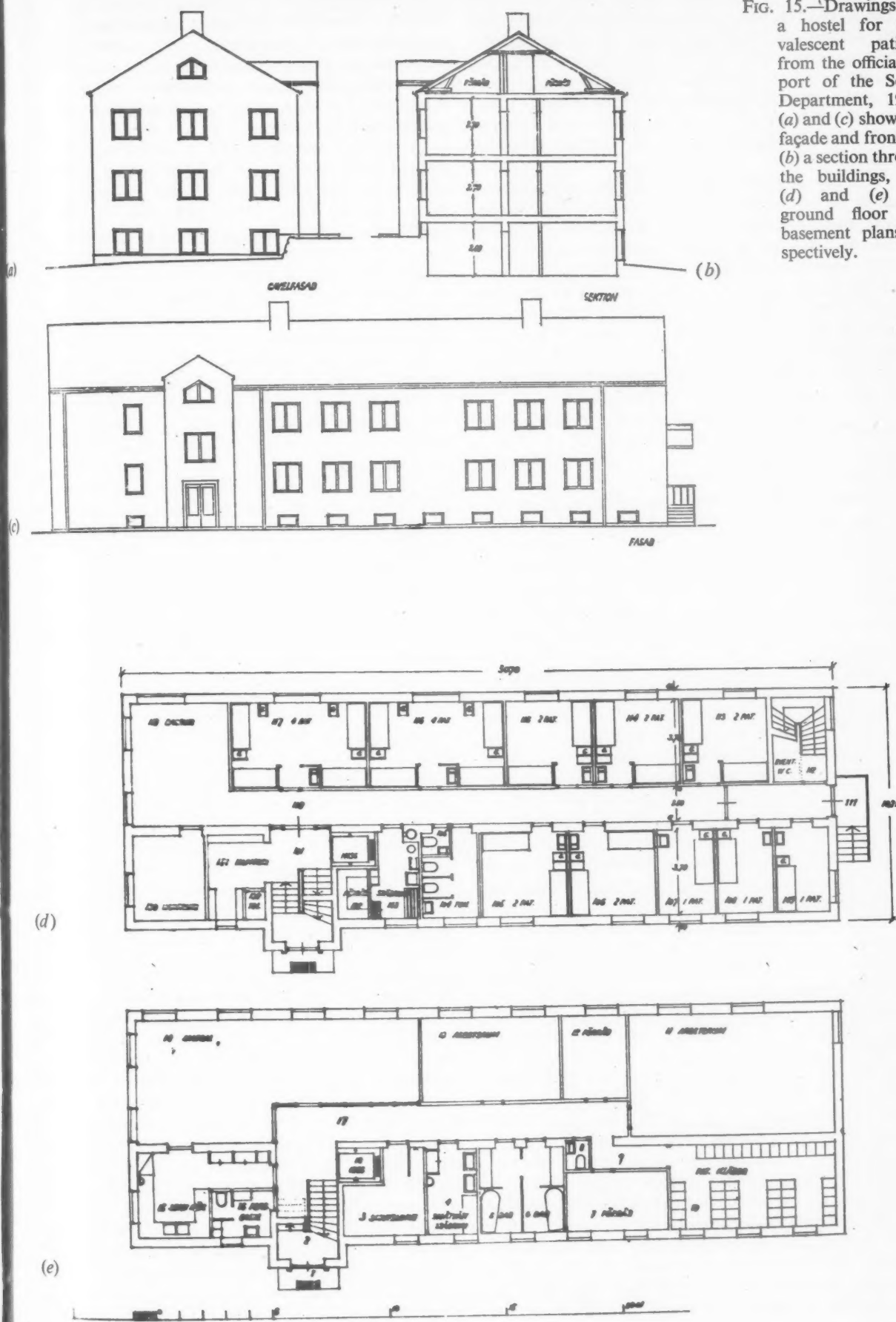
TABLE 2
NUMBER OF BEDS OCCUPIED BY RHEUMATIC PATIENTS DURING THE YEAR 1943

Groups	Number of days for the rheumatic patients who, during 1943, were discharged from:		Number of beds occupied by rheumatic patients during 1943 (number of days divided by 360)		
					Total
	The Pension Board's establishments	Other kinds of hospitals	The Pension Board's establishments	Other kinds of hospitals	
I	25,278	141,518	70	393	463
II	172,577	148,135	479	412	891
III	11,086	81,692	31	227	258
IV	25,065	153,520	70	426	496
Total	234,006	524,865	650	1,458	2,108

TABLE 3
NUMBER OF BEDS NEEDED

Group	Total number required		Existing beds		Existing beds subtracted from total required = new beds required
I (acute arthritis)	949		463		486
II (chronic ..)	2,415		891		1,524
I + II		3,364		1,354	2,010
III (arthrosis) ..	570		258		312
IV (other cases) ..	1,031		496		535
III + IV		1,601		754	847
Total		4,965		2,108	2,857

FIG. 15.—Drawings for a hostel for convalescent patients from the official report of the Social Department, 1944: (a) and (c) show side façade and frontage, (b) a section through the buildings, and (d) and (e) the ground floor and basement plans respectively.



to be special rheumatism wards, I think we should also have orthopaedic wards linked with them. But we cannot build as many hospitals as we should like to do in these days, because we have not enough coal to make bricks, and because we must export a lot of our building materials to people who are in still greater need of houses and hospital beds than we are, especially to the formerly occupied countries.

Another question which is not yet finally agreed upon is after-care. Should there, in connexion with our first-class hospitals, be hostels where the patients who are on their feet could stay for some time and be controlled and treated in the out-patient department of the hospital? This arrangement is not as cheap as one would think, amounting to some 50% of the cost of building an A-hospital, and some 75% of the running cost. With others, I think that about 20% of beds in every hospital ought to be given over to patients needing after-care.

The Committee has worked out a special report about these hostels (Official Report of the Social Department, 1944: p. 28) with a number of drawings. One example is given in Fig. 15.

The present Parliament has promised to give more money for building wards for chronic sick at the central county hospitals. In ten years we believe we should have between 15,000 and 20,000 such beds for old age. We have now only a third of what are needed. In Sweden as in Europe generally, the older age-groups in the next fifty years are going to be over-represented in numbers. We are, therefore, preparing for chronic diseases of old age on a large scale. Rheumatic diseases are in the front rank of these. We expect to have more than 2,000 of our required 3,000 beds very soon: 550 in internal wards, 450 in special rheumatic wards, some 750 in hostels, and at least 500 in central wards for chronic sick. Half these beds are needed to provide hospital care for rheumatic patients who have no such care at all, the other half for giving the rheumatic patients a reasonable length of time in hospital. More detailed figures are given in the Report from the Social Department 1945: p. 41.

Some arrangement is made for the follow-up and out-patient care of the rheumatic sick in connexion with the out-patient department for internal diseases. But the organization is not as it should be. We have not yet enough social workers. A special committee recently proposed a fixed number of social workers for every hospital of a certain size, but the Minister has not yet put this before Parliament. We intend to organize a follow-up in connexion with the special wards as soon as they are functioning with their special chiefs. We do not think that a comprehensive dispensary organization distinct from the work of the general family doctor is appropriate. But a specialist control service, attached to the out-patient department of the special wards and working in close connexion with the family doctor and his nurses in the districts, we think will be useful. This will be one detail in a comprehensive scheme for a complete and effective health service

such as we are trying to build up, just as you are in Britain. Every year Parliament organizes fifty new rural districts for physicians; and nursing district vacancies are little by little filled as the nurses leave the training school for district nurses. District nurses and district family doctors will attend rheumatic patients in their homes.

In Sweden we have had a socialized hospital service working well since 1870, a district physician service for 250 years, and a rural district nursing system for 20 years. We plan soon to have an organization of medical gymnasts spread over the country. But it will take 15 years fully and finally to realize these district plans, because we are so short of doctors, nurses, and gymnasts. We have, for example, one physician to 1,600 inhabitants, where you have one to 1,100.

In Lund the academic wards for rheumatic patients are to be doubled. In Stockholm the last Parliament fixed the site and gave money for a new rheumatic hospital as a part of the Caroline Hospital, side by side with the new Research Institute. In Uppsala we also proposed and had plans drawn up for a central rheumatic and orthopaedic institution of 150 beds, but this has been postponed by a vote of the academy itself. In the old University of Uppsala there are many old buildings that really need to be replaced, and the question of priority is, therefore, acute. So they once more are reviewing their plans for the Medical City of Uppsala. Our Swedish love of planning sometimes endangers action!

Concluding Remarks

There seems to be a curious lack of system in our building of rheumatic wards. Generally, you in Britain begin by establishing university wards under a professor, who works, teaches his staff, and prepares young doctors to take over responsibilities at the periphery. We, on the contrary, began with beds in special isolated institutions and later in county hospitals, and are finishing by establishing university hospitals. It would be possible to philosophize about this order, but I do not think it necessary. The whole organization of the care of rheumatic patients is being completed because the rheumatic diseases themselves necessitate it. All in all, it may be said that for a long time there has been a certain activity on the rheumatological front, and that at the moment in Sweden this activity is considerable. Some months ago Edström and others founded the Swedish General Association for fighting rheumatism. This Association is connected with other great national movements, such as the Labour Movement, the Association of Employers, the Health Insurance Movement, the Swedish Medical Association, the Nurses' Association, and the Association of Social Workers. The nearest model for our body is the Danish association, but our prototype is the Empire Rheumatism Council. We are beginning with the education of the medical profession and the public. Then, I think, an

experimental colony for tropical rheumatic treatment may be established somewhere in Africa.

I do not know whether even acute rheumatic arthritis is a single aetiological unity. The chain of interfering factors may be rather complex. While we are now proceeding in Sweden to tackle these difficult problems in our own corner of the globe,

we look to English science, with its obstinate perseverance on sound scientific lines, for the flash of inspiration. We know that the rheumatic diseases are, if not a monopoly of the British Isles, at least for some reason very favoured in them. From the depth of the fog we hope for the word from British science: let there be light!

(For further Illustrations of this Article see page 197)

PROBLEM OF CHRONIC RHEUMATISM*

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The following data is from the National Health Survey of the United States Public Health Service of 1937, revised in 1939:

"There is an ever-growing concern in the United States over the problems presented by chronic disease. This concern has, in part, resulted from the belief that the problems of chronic disease, or of certain chronic diseases, is increasing. Whether or not there is any increase in the prevalence rate at any given age, it is certain that the total volume of chronic disease is growing from year to year, since older persons, among whom chronic disease is more prevalent, are constituting a larger and larger proportion of the population. If the statement is accepted as valid—that the greatest need for action in the field of public health is where the greatest saving of life and prevention of suffering can be made—then, without doubt, the chronic diseases merit the attention they are receiving."¹

Chronic Disease

The "reports are based on a house-to-house canvass of some 800,000 families including 2,800,000 persons in 83 cities and 23 rural areas in 19 states."² "It is estimated that 23,000,000 persons, or more than one person in six in the United States have some chronic disease, orthopaedic impairment or serious defect of hearing or vision. By reason of these disorders almost a billion days annually are lost from work or other usual pursuits and a minimum of 1,500,000 persons are disabled for such long periods of time (twelve months or more) that they can be considered permanent invalids."³

"Chronic disease is far from a problem of old age alone. Half of the persons in the Survey for whom chronic disease or impairments were reported were under 45 years of age, and over 70% of these persons were under 55 years. Over half of the persons permanently disabled, and almost 30% of the persons who died from chronic disease were under 55 years of age."⁴

"The onset and sometimes periods of remission and recrudescence of symptoms characteristic of chronic disease make it difficult to distinguish between normal health and the milder forms of ill health. In the house-to-house canvass made by the Health Survey, two states of ill health were reported: disabling illness which had kept persons away from work, school, or other usual pursuits for seven consecutive days or longer during the twelve months preceding the day of the canvass."⁵ "A chronic disease was considered to be

a state of ill health, if in the opinion of the informant it was handicapping."⁶ "The most prevalent chronic diseases are: (1) rheumatism, (2) heart diseases, (3) arteriosclerosis and high blood pressure, (4) hay fever and asthma. The outstanding cause of disability (expressed either as the number of days lost or as the number of persons permanently disabled) is nervous and mental diseases, with rheumatism second and heart diseases third, followed by tuberculosis, and arteriosclerosis and high blood pressure."⁷

It is evident, therefore, that rheumatism is first in numbers, second in disability, and fourteenth in mortality, while heart disease is second in frequency, third in disability, and first in mortality. It is estimated that there are 6,850,000 rheumatic cases in the United States, causing a loss of 97,200,000 days of work. It is estimated that there are 147,600 invalids and only 4,400 deaths from rheumatism.⁸

At the end of the World War 1914-18 the United States Army estimated it had 60,000 chronic arthritic cases annually, and, of "the ex-service men, 35,000 are disabled by arthritis at the present time (1939) and receiving compensation to the extent of 10 million dollars annually."⁹ Comparing these figures with nervous and mental diseases, we find that there are about 2,000,000 cases but it has been estimated that about 10,000,000 more will be under treatment during their lifetime.¹⁰ It is estimated that 132,500,000 work days are lost annually through nervous and mental diseases. It produces 269,300 invalids, and the mortality is 22,900.¹¹ It is estimated that it cost the country 500,000,000 dollars.¹² These figures are staggering, and leave us no alternative but to find a way to stop this wastage. What many of us in America are realizing is that we must find some way for people to live successfully in a social and emotional environment which will prevent chronic disease. This is why we doctors, in the United States, are concerned about rheumatic disease. In 1928, therefore, the American Committee for the Study and Control of Rheumatic Diseases came into existence as a member of the "Ligue Internationale contre le Rhumatisme". Through it was born the American Rheumatism Association, with an increasing membership since 1930. Most encouraging progress has been made, especially in the greater attention now paid to the problem in the medical schools. A number of special clinics for research and hospitals devoted to the care and study of patients with

* Paper read before a recent meeting of the Empire Rheumatism Council.

rheumatic diseases has resulted: the methods of treatment have been better evaluated, and a fuller understanding of the basic nature of rheumatic diseases is being realized. Much still remains to be accomplished. In the United States we feel "that significance attaches to arousing in the public mind appreciation of the disease as a social problem, the value of adequate treatment in the early stages, and the importance of providing adequate institutional care"¹³ in all stages of the disease.

Aetiological Theories

If we only knew the exact cause it would be much easier. In the majority of cases the aetiology cannot, as yet, be definitely determined. In the *Primer on Arthritis*,¹⁴ published in 1942 by the American Rheumatism Association and the American Medical Association, we have divided the cases into five groups: (1) frankly infectious cases caused by specific organisms such as syphilis, gonorrhoea, pyogenic cocci such as haemolytic streptococcus, pneumococcus, and the staphylococcus, (2) probably infectious, the aetiology unknown, such as rheumatic fever and rheumatoid arthritis, including Marie-Strümpell and Still's disease—the infective agent has not been found; (3) degenerative joint disease, or osteo-arthritis—we believe this is a degenerative process; (4) arthritis due to physical trauma; (5) arthritis, or gout, commonly defined as a disturbance of purine metabolism, origin unknown.

There are two schools of thought regarding the aetiology. Firstly, there is the school which considers rheumatism to be the direct result of bacteria, either by infection or by toxins: at the moment we have no proof one way or the other. Secondly there is the metabolic theory, such as protein and carbohydrate metabolism, vitamin deficiency, or endocrine disturbance.

To quote from the *Primer*:¹⁵ "various factors such as climate, fatigue—emotional strain—trauma, or acute infections, may precipitate the initial or recurrent attacks of rheumatoid arthritis, but they cannot as yet be accepted as causative agents".

"The cause of rheumatoid arthritis being unknown, students should continue to search for hitherto undetected metabolic factors as well as organisms."¹³

"It seems probable that the disease affects primarily the ground substance of the mesenchyme" existing in the interstices between cells and fibres of mesenchymal origin.¹⁶

"In many instances the initial complaints are those of fatigue, exhaustion, lassitude, vasomotor disturbances, numbness and tingling in the extremities, loss of weight and general debility."¹⁷

In a certain proportion of cases the disease appears to follow an upper respiratory infection: "in other cases such events as emotional stress and strain, severe nervous shock and various psychic traumas appear to exert a precipitating influence."¹⁸

Treatment

I know of no cure for rheumatism. However, I believe rheumatic diseases can be controlled, first by improving the general health. We in America

believe in rest as the most important measure in the treatment of disease. The rest should be complete: rest for the body, preferably in hospital, for at least six weeks, if necessary longer, and I, personally, believe hospitalization is important in order to get people away from home and to make a complete change for the patient, giving him a breathing space from the environment in which he became ill. I also believe that local rest in splints, under constant orthopaedic supervision is imperative. The medical and orthopaedic service must work as a team, in complete agreement as to the policy in each case.

Every effort must be made to maintain the nutrition at its highest point by a well-balanced diet, taking into consideration the vitamin deficiency found present. There is no specific diet that we know of. We have also found small, frequent transfusions of great help in getting our debilitated patients started. I believe that splints relieve pain, and it is necessary at times to use sedatives, in order to relieve strain and suffering. Heat and sunlight are a help, and relieve the patient of the necessity for meeting climatic conditions, which vary a great deal in certain parts of the United States. We find the disease rare in the tropics, and less frequent as we go south. I believe that the conservative removal of the focus of infection, wherever it is possible without detriment to the patient, helps in lightening the load while we build up general health.

It is essential to prevent deformities, particularly postural defects, which we, in America, consider tremendous handicaps in the normal functioning of the viscera, and so a handicap to the recovery of the general health. We feel that this is as important as rest. Personally I believe that most of the deformities of rheumatoid arthritis are unnecessary if anticipated and adequately splinted and cared for by rest, heat, and judicious exercise early.

Quoting from the *Primer*: "The importance of psychic factors in rheumatoid arthritis is great". The attitude of the patient to his emotional environment, to the atmosphere of his home, especially to the problems of his life, is of vital importance, particularly the relationships with members of his family and those at his place of work. I am increasingly convinced that the way he reacts to the people about him, positively or negatively, is one of the most important single aetiological factors in the understanding and treatment of rheumatoid arthritis. This belief is due to having seen the most amazing improvement in patients where home relationships have been straightened out, particularly resentment and fear. The loss of happiness and security are vital to the health of these chronic cases. If only two methods of treatment were available to me in treating rheumatic diseases, I would choose first to create sound home relationships, and second, to develop a sound body through correction of posture and the development of proper circulation by exercises.

A woman of forty came to the hospital sent by her town. She had a severe rheumatoid arthritis which had crippled her hands and her legs. For the first three

weeks she did very well and seemed happy. Then she began to be sick to her stomach after breakfast. This continued for a week and she seemed to get worse; many of the joints became swollen. As we could find no physical cause for this, I spent two hours with her one evening and discovered she had developed a tremendous resentment amounting almost to hatred of the woman in the next bed, who had many visitors during visiting hour while she had none. During the three weeks this resentment had increased day by day until she would not speak to the other woman. She was scarcely conscious of how deep this resentment had gone, but when she saw that emotions of jealousy, envy, criticism, hatred, were real sin and were against the teachings of her religious belief, she became greatly convicted of wrong thinking and decided to change; having confessed to me, she asked forgiveness of God and apologized to the woman in the next bed. She felt so much better the next day that she apologized to the whole ward, which she had been upsetting by her bad temper, and then proceeded to go round in her wheel chair straightening out the problems of other people who would not eat their meals or do as they were told. That ward had the best Christmas it had ever had. A few months later her husband came in, stating that she had never had any friends at home because of her "grouch", and that she had been having him come home from work every two hours to see how she was until the home relationships had been greatly strained. Now she had the house full of people whose troubles she was unravelling, and it was the best investment the town had ever made. She wrote me that she was perfectly happy to be in a wheel chair, her arthritis no longer hurt her, and she had found her real job in life, helping other people. This was only an example of many cases of which I have records which show that a change of heart has a tremendous effect on the recovery from arthritis.

Other methods of treatment with which we are experimenting in the United States may be of interest: of how much value they are remains to be determined.

CHRYSOTHERAPY

The use of gold salts has long obtained considerable vogue, in France and England. "At the present time they are being given wide therapeutic trial in the United States."¹⁹ We feel, to quote the *Primer* again: "that the results, as far as cures are concerned, are far from miraculous, but in view of the large number greatly relieved, a continuance of the trial of this form of treatment, under controlled conditions, is both desirable and justifiable."²⁰

Lately many of us in the United States have changed our method of using gold. The changes have been based on the researches of Dr. Richard Freyberg, formerly of Ann Arbor, who showed that gold was excreted very slowly, and often remained in the body for six months after the last injection. I have, therefore, been giving 10 mg. twice in one week; then 25 mg. for two injections, a week apart; then 50 mg. once a week; never giving the 100 mg. that we used to give, but continuing 50 mg. up to 1 or 1½ g. of gold salts. At the end of this series, we have continued with 25 mg. every two weeks, and then once a month for an indefinite time. This seems to have given more satisfactory results. It decreases

the toxic symptoms, and the dangers of gold therapy and recurrences are fewer.

VITAMIN THERAPY

I feel that vitamin therapy, over a long period of time, does have a beneficial effect, and that many cases are borderline vitamin deficiency cases. On both coasts of America reports have been published which coincide with regard to vitamin C, which has been found to be deficient—according to blood tests at the Robert Brigham's hospital and at the University of California—in about 60% of the cases studied. I find that the rheumatoid arthritis cases with a low blood vitamin C require three times as much synthetic ascorbic acid to bring the blood level to normal as was required in the non-arthritis. Vitamin A was found to be deficient in about 80% of our hospital cases, according to the biphotometer tests. Recently we have been doing much work on the vitamin B complex in its component parts; using the tongue as our guide to the deficiency. Remarkable changes have taken place in the appearance of the tongue when this therapy was properly carried out. My own conviction is that the use of vitamins A, B, and C, must be carried out over years in order to undo the effects of many years of sub-clinical deficiency before we can estimate its value. There has been much controversy over vitamin D in massive doses. To quote the *Primer* again: "Large doses of vitamin D should be regarded as of doubtful, if of any value". As yet we do not know how long to continue vitamin therapy, or the size of the doses which are needed; all we can go by is the clinical picture of returning health in those patients; we have not felt justified in using this treatment alone.

Dr. Francis Hall of Boston has shown that certain arthralgias, caused by castration and at the menopause, resemble the pain of rheumatoid arthritis and are quickly relieved by the use of oestrogens.²¹ Many cases of real rheumatoid arthritis apparently are also benefited by this treatment, of course as a supplement to the general care which I have outlined. It is, however, an important lead to be followed up.

X-RAY TREATMENT

I find that most rheumatologists are now using x-ray treatment in Marie-Strümpell arthritis. Some in America consider this disease a rheumatoid arthritis; there are others who strongly believe that it is a separate entity. I think I can say that the opinion is that x-ray treatment is the most curative agent we have at the present time, and this, in combination with the prevention of deformity by the use of specially fitted plaster jackets,²² or strong, light, body braces to control the posture, have given the best results in restoring these people to health. The way we use the x-ray treatment is to plot out areas of the spine and hips, if these are involved, and give exposures in series, three times a week until twelve treatments have been given; after three months' rest, depending on the activity of

the disease, we repeat the series. Sometimes three series are given within a year. We have found that the improvement has been progressive in most cases. In some there has been complete freedom from signs and symptoms at the end of a year, and there is no question but that the posture, if treated early with jackets, can not only be maintained but corrected. Sometimes the simple rest of the back in jackets has seemed to arrest the disease. It certainly has made life much more bearable and has allowed young men to continue at work even in the Army, which would have been impossible without jackets.

Psychosomatic Aspects in Rheumatoid Arthritis

There has been increasing interest in the psychosomatic aspects of rheumatoid arthritis. Many clinics are studying this from many angles, and it seems that "the psychic factor in this disease is great". In my own clinic I find that 70% of the onsets and exacerbations were traceable to emotional disturbances, largely due to relationships at home—to the type of emotional reaction which the patient had developed towards people. The two primitive emotions of resentment and fear were found to be most important, and it is vitally important that the arthritic and his family should learn to live together harmoniously. Sometimes the patient was a menace to the home; sometimes the atmosphere of the home was the cause of his resentments. These experiences over the past ten years have led me to suspect bad relationships and search for the answer. The correlations are far more frequent than can be explained by coincidence.

The Problem of Chronic Disease

In studying the whole subject of chronic disease, I believe that the atmosphere of the home is far more important in cases of nervous and mental disease, in functional heart trouble, in asthma, and in gastro-intestinal diseases than we, at the present time, realize. The figures I presented at first have shaken me out of my lethargy. "Twenty-three million persons, or more than one person in six, in the United States have some chronic disease. One billion work days lost from chronic disease! One million, five hundred thousand invalids from chronic disease!" It is unbelievable but true. As a result of this appalling situation many physicians are beginning to feel that it is a hopeless task to treat this number of cases, that we shall never catch up with the production. Some of us believe that we must think and plan in a new way: that we have been so preoccupied with the fascinating study of disease that we have forgotten the individual who is ill, bodily, mentally, and spiritually in many cases, and have, therefore, failed to appreciate that many illnesses are really due to the way life is lived in our homes, producing an atmosphere where health or illness is the inevitable by-product: and that in many instances chronic disease is inevitable unless change and team-work can be instituted in the home.

The problem of chronic disease necessitates a

new kind of responsibility from us physicians to direct people to a new inner discipline and moral standards. Dr. Thomas Parran, Surgeon General of the U.S. Public Health Service, in his book "Shadow on the Land", reports that there are about six million people suffering from the effects of syphilis in the United States.²³ It is, therefore, second to arthritis in frequency. It is clear that the answer is not in new drugs but in moral living. Every day in America seven million people are unable to work because of illness. It is stated that one third of this is preventable. Somehow our civilization has lost its ability to live the kind of life which will produce robust health. Even with more doctors, more hospitals, more research, more drugs, we cannot cope with the advance of chronic disease at present. To many people freedom has come to mean the liberty to do anything they want, not the glad spontaneous desire to do as they ought. For many there is no great integrating force in their lives which gives emotional balance and physical and moral discipline: therefore the broken homes and a continuing casualty list of insecure, fearful, confused, and emotionally disturbed people and chronic disease. If medicine is to fulfil its destiny, I believe it must help people to find this force which will change them and give them the security they need for the attainment and preservation of their individual health and a way of living which is physically, emotionally, and morally sound. If the profession could do this on a national scale, it could help produce a nation of sound homes and a health programme for the world.

My thinking was limited by the idea that human nature was unchangeable. This is a false premise. To me it has been the startling discovery that human nature can be progressively changed, and this type of change has had surprising results in many of my rheumatic cases, as I reported in my presidential address to the American Rheumatism Association in 1942.²⁴ This fact makes available an undreamt-of therapeutic force for bringing health.

We live now in a new age where the speed of disaster threatens to make our scientific advances a mockery. I discovered that I needed a new caring, a new sense of responsibility, a new philosophy for my medicine if I was to secure adequate help for my patients. This holds true for the millions with chronic disease. For health is not based on economics, but on morals, the way we live. It is not what we have, but what we are. And it is not so much where we live as how we live. Health begins in the home. In the light of these facts, may we physicians not initiate a new medical era by taking responsibility for the homes as well as the patients and showing them how to live with the inner discipline they need and the inner liberty they desire. Total fitness will come as a by-product.

The British Medical Association has recently created the machinery necessary for international teamwork in the promotion of world health. I congratulate Britain on this great step forward. For, as physicians, it is up to us to carry the world on our

hearts and heal it. It has become a patient with a chronic disease.

In conclusion I wish to repeat my convictions that rheumatic disease and chronic disease in general is profoundly affected by the way of life and thought of the individual and his community. The prevention and cure is an integrating constructive ideology, which alters the reactions between people and changes attitudes, leading to sound relationships at home, sound habits, and a new sense of direction and responsibility. We doctors have had a passion for disease. Now we must have a greater passion for health. I have found there is a divine force capable of changing human nature and the world if we choose to use it. It has changed my approach to the practice of medicine. Just as it has in my experience been the deciding health factor in many

cases of chronic rheumatic disease, it will be the deciding health factor when applied to the state of chronic illness of the world to-day.

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FIG. 4.—The Rheumatism Hospital, Nynäs.



FIG. 6.—The Rheumatism Hospital, Åre.



FIG. 5.—The park of the hospital, Nynäs.

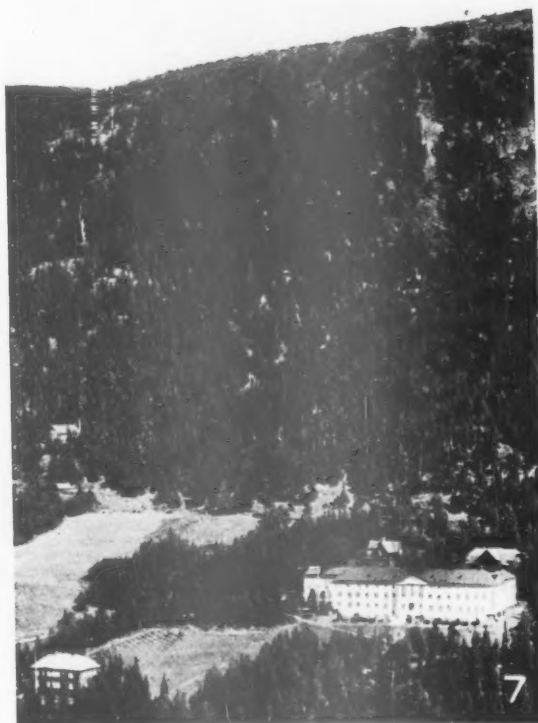


FIG. 7.—The Rheumatism Hospital at Åre, from the air.



FIG. 8.—The Rheumatism Hospital at Norrköping.

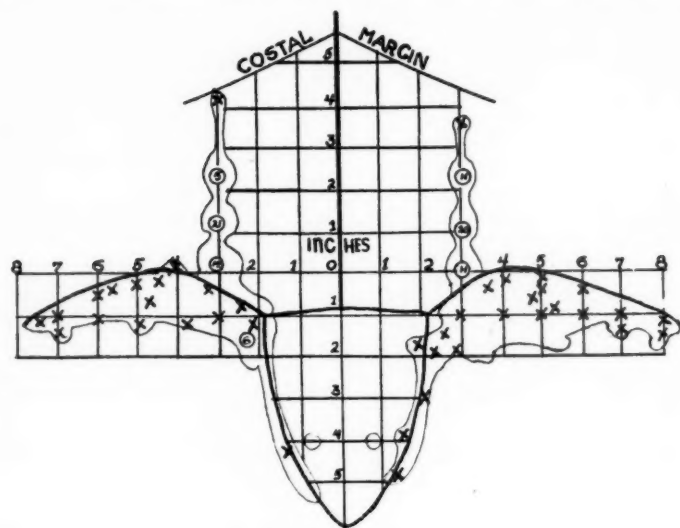


FIG. 1.—Situation of “trigger points” of pain (from Copeman and Ackerman).

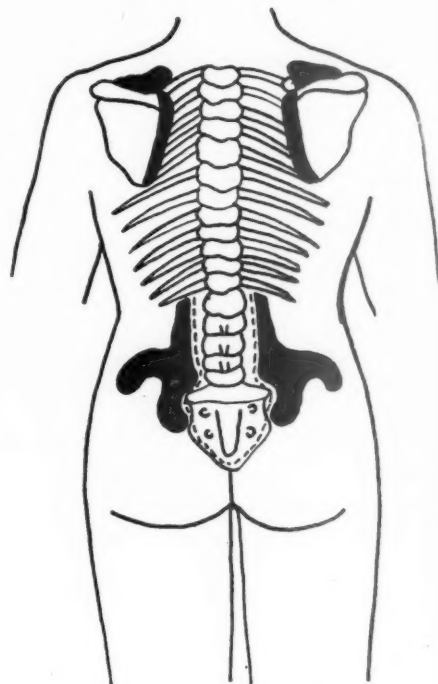


FIG. 2.—Basic fat pattern in the lower back (from Copeman and Ackerman).

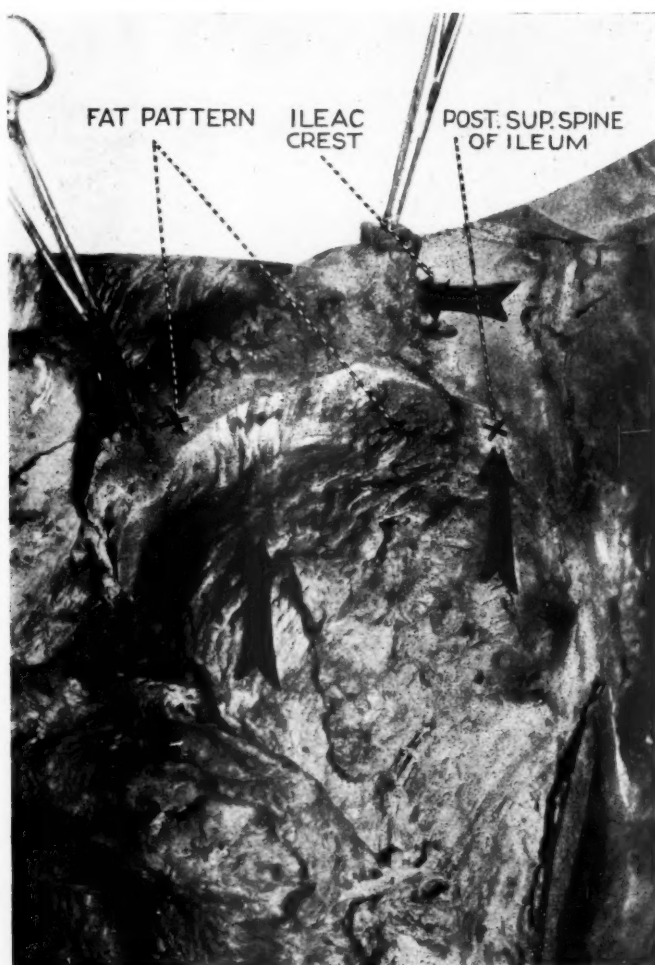


FIG. 3.—Situation of basic fat pattern in relation to the gluteal muscle as shown by dissection.

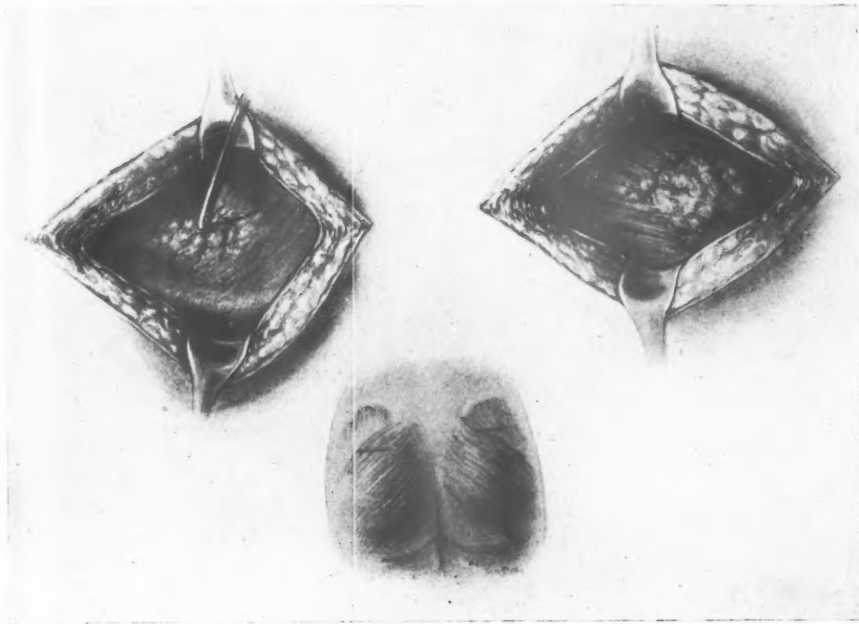


FIG. 4.—Technique of operation for removal of bilateral subfascial fat herniae.

FIG. 5.—Technique of operation for removal of bilateral subfascial fat herniae—*continued*.

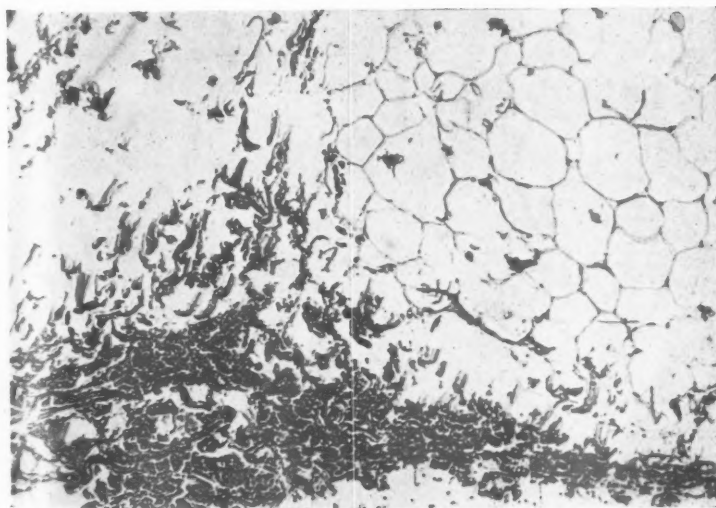
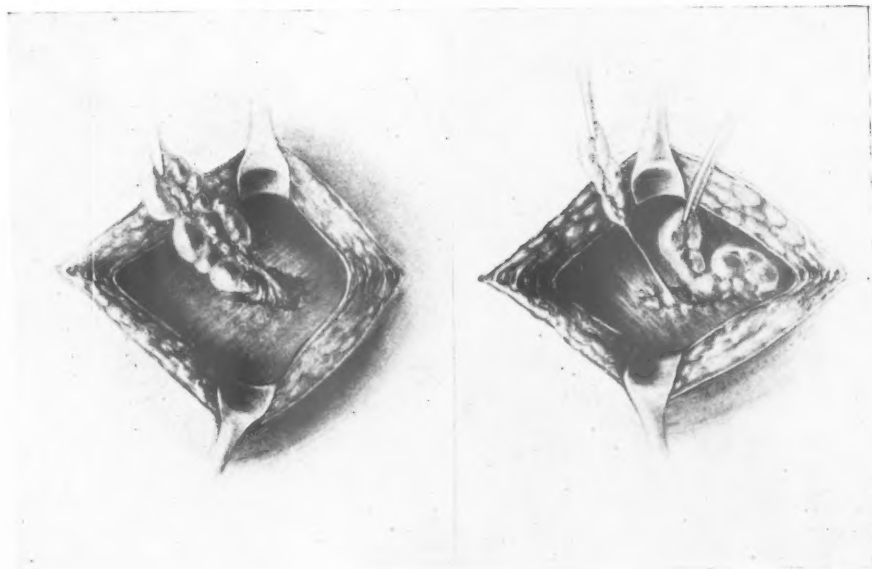


FIG. 6.—Photomicrograph of herniated fat.

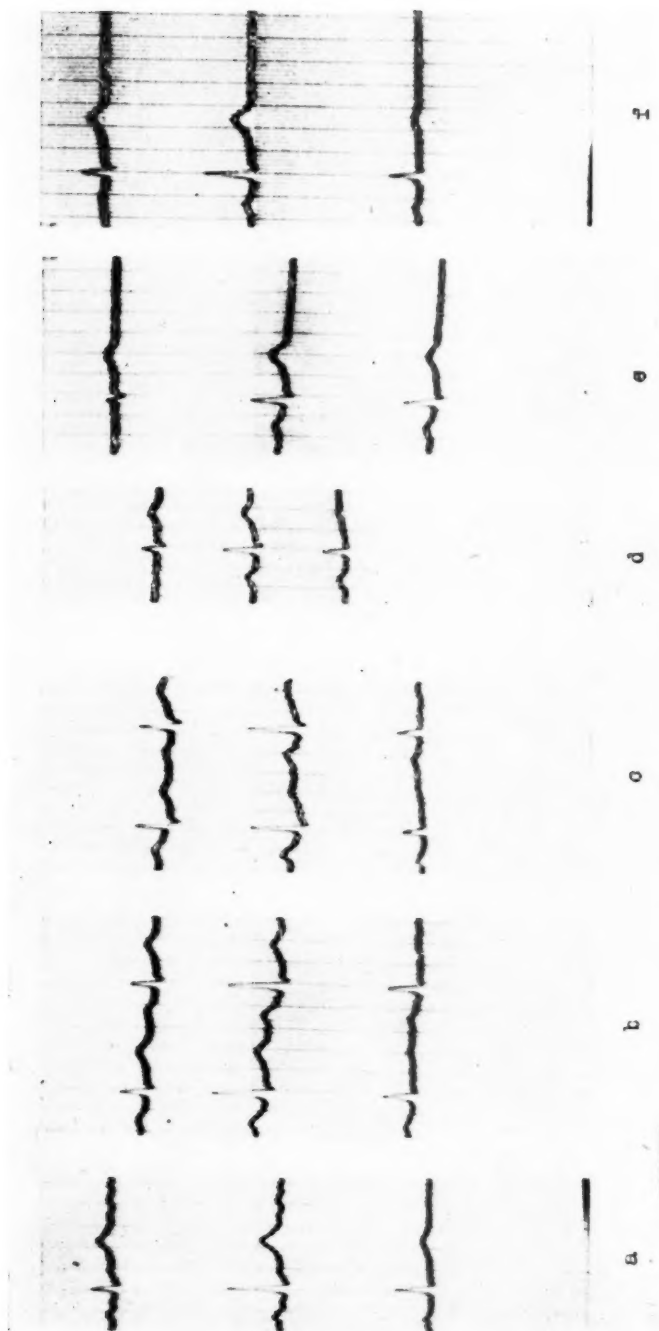


FIG. 3.—Variations of the electrocardiogram during and after a Sauna bath. Male patient, aged 25, after poliomyelitis. The heart and circulation were clinically normal. All electrocardiograms were made in the recumbent position. The duration of the hot-air bath was 13 minutes. The air temperature was about 75° C. (167° F.).

(a) Before Sauna bath. Heart rate 71; blood pressure 105/70 mm. Hg.

(b) Three and a half minutes in the hot-air room. Heart rate 120.

(c) Eleven minutes in the hot-air room. Heart rate 123; blood pressure 125/60 mm.

(d) Two minutes after leaving hot-air room. Room temperature 20° C. (68° F.). Heart rate 107; blood pressure 110/50 mm.

(e) Four minutes later, immediately after cold douche. Heart rate 61; blood pressure 105/55.

(f) One hour after hot-air bath, patient lying in bed. Heart rate 59; blood pressure 105/70 mm. Hg.

Note the elevation of P_2 , depression of ST and flattening of T_2 in (c); typical sympathetic variations, disappearing after the cold douche. (From Ott, *Die Sauna*.)

HERNIATION OF SUBFASCIAL FAT AS A CAUSE OF LOW BACK PAIN

REPORT OF THIRTY-SEVEN CASES TREATED SURGICALLY

BY

RALPH HERZ

Cleveland, Ohio

In July, 1945, in the *Journal of the American Medical Association*, I reported six cases of low back pain in women relieved by excision of herniated fat. Now I wish to record more extended observations in thirty-seven cases of this type subjected to surgical treatment before March 1, 1946, and to show that herniated subfascial fat is a causative agent in producing disabling low back pain in a certain well-defined group of cases.

In the first three cases I observed, the cause of the difficulty was not definitely recognized, nor the results of surgical treatment actually explained. All three were women who had severe and disabling back pain, initiated by trauma, which had recurred in several extremely severe exacerbations. One patient had had recurrent attacks of acute lumbago for fifteen years; this had been incapacitating and required bed rest. In each patient there was a palpable nodule in the sacro-iliac region; pressure on this caused local and radiating pain. Injections of anaesthetic solution around this painful nodule yielded striking and immediate, though temporary, relief. Surgical exploration of the painful area showed only a mass of fat, which was excised. In the first instance in which this was done, the patient experienced immediate relief as soon as she recovered from anaesthesia, and this relief has persisted for nearly three years. This excellent clinical result, though unexplained, furnished justification for performing the same procedure in the other patients with similar symptoms and physical findings, who also obtained relief. The pathologist's report on the tissues removed in these cases was not enlightening. These observations stimulated an inquiry as to the basic cause of the condition and the reason for the relief obtained.

The Work of Copeman and Ackerman

The medical literature afforded no clear explanation until the excellent study by Copeman and Ackerman appeared. These authors charted the trigger points in fifty consecutive cases of low back pain in soldiers (Fig. 1)*. Such points, according to a recent clinical fashion, especially in England, have been attributed to "fibrositis". Hence Copeman and Ackerman first sought, and expected to find, a lesion of fibrous tissue accounting for them.

However, in dissection of fourteen cadavers, they found that the situation of trigger points could not be correlated with any fibrous structures, but that it coincided almost exactly with the basic fat pattern in the back (Fig. 2)*. They found that beneath the subcutaneous fat and areolar tissue lies the highly vascular superficial fascia, which forms a continuous sheet from the neck to the gluteal region. Space between this and the deep fascia is principally potential, containing little or no fat. In certain well-defined places, however, deposits of pink fat constantly occur. These, with equally constant deep areas, constitute the basic fat pattern. In obese persons this fat pattern tends to be obscured by more generalized deposition of fat. The fascias are not of uniform thickness, being notably thinner in certain places, and frequently there are actual deficiencies in the fascial membranes. In these places the underlying fat tends to bulge through, sometimes resulting in complete herniation (fat hernia). These small hernias tend to occur at points where the fascia is weak, and they probably do not give rise to symptoms until some incident, such as sudden trauma or prolonged confinement to bed, produces an increase in the fat pressure and a painful degree of distention. This leads to oedema, which may perpetuate the condition. On the basis of this explanation of "fibrositic" nodules which constitute trigger points of pain, Copeman and Ackerman subjected ten patients to surgical excision of the fatty herniations, with striking relief of severe and disabling back pain.

This report shed considerable light on the subject of these painful fatty nodules, and offered a likely explanation of the clinical results that I had observed. I was puzzled, however, not to find other clinical reports in the literature on relief of back pain by removal of a herniation of subfascial fat. At the time my first paper was published, I had found none. Later, several reports of fatty nodules have come to my attention, and there may be others which have not been found, because they have been reported under varying titles. So far as I have learned, Copeman and Ackerman were the first to furnish a definite anatomical explanation for painful nodules in the back. Others (e.g. Sutro, 1935) have observed fatty nodules in the back and have even observed

* See p. 198.

* See p. 198.

striking relief of pain after injection or excision, but have offered no explanation for this result. It is interesting that even Copeman and Ackerman's report is indexed under "fibrositis", with nothing in the title to suggest that the subject treated is herniation of subfascial fat.

Personal Observations

The rational explanation of my clinical results, which Copeman and Ackerman's careful study furnished, led me to the dissecting room. Findings in the backs of several cadavers were essentially the same as they reported. In a cachectic specimen the fascias were more easily delineated, and the basic fat consisted of a very thin layer. In a normal specimen (Fig. 3)*, the fat pads were considerably thicker, and the fascias less easily defined, with considerable variation in thickness and more numerous weak points. This apparent tendency to thinning of the fascia with greater quantity of fat is interesting as a possible explanation of the fact that clinically the incidence of low back pain from this cause is much greater in obese women than in any other group. In all specimens dissected, the distribution of fat between the outer and inner layers of the superficial fascia followed approximately the same distribution as that of the fat overlying the superficial fascia. Incision of the deep layer of the superficial fascia revealed a large fat pad, lying over the gluteal region about 3 cm. below the crest of the ilium and about 3 cm. from the spine or midline, which extended below the level of the posterior superior spine of the ilium, and measured roughly 10 × 15 cm. In all specimens the deep layer of the superficial fascia had several weak areas, through which this fat could very easily be forced into the space between the two layers of superficial fascia.

Between October, 1943, and February 23, 1946, I observed 109 cases of this syndrome. Operation was performed in thirty-seven, and results have been almost uniformly good. Thirty-four patients have had complete relief. In three the results were unsatisfactory.

The typical story in these cases was that trauma resulting from physical strain initiated the back pain, which was extremely severe and often was referred down one leg. In some there had been recurrent attacks of such pain for many years, with periodic incapacitation. In all cases a definite nodule was palpable; this was extremely tender, and pressure on it intensified the pain. Important diagnostic features were the history of trauma, the severity of the pain, the frequency of radiating pain down the leg, and the presence of a palpable tender nodule. The crucial point was the relief of pain and muscle spasm after injection with anaesthetic solution. The following cases are illustrative of the group as a whole.

Case Histories

CASE 1

A man, aged 29 years, presented himself to another physician with severe pain in the lower back and radiating

down the left leg. About fifteen months earlier he had fallen while straining and pulling a heavy object. Three months after this accident he had been placed in a cast, but returned to work about two months later. Leg pain, with occasional numbness, became so severe that he had lost more and more time from work, and had been unable to work at all for a month before he was examined. For several weeks he had had little rest or sleep.

Neurologic examination revealed a drawing and burning sensation and hypalgesia in the distribution of the fourth lumbar nerve on the left. There was slight atrophy of the left thigh, and patellar reflexes on the left were somewhat decreased. The Naffziger test was negative. The clinical diagnosis was a protruded disc between the third and fourth lumbar vertebrae; however, since the evidence was not conclusive, operation was deferred.

Three months later, the patient returned to the same physician for further observation. There had been no relief of pain during the interim, except for some diminution in the left calf. There were no paraesthesias. The left patellar and Achilles reflexes were diminished. A tender swelling was observed in the left gluteal area. Radiographs of the lumbo-sacral spine revealed no abnormalities, and the spinal fluid was normal.

At this point I was called into consultation, and palpated two painful nodules in the left gluteal region. After injection of 3 c.cm. of 2 per cent. procaine solution, the pain abated. A diagnosis of multiple fascial fat herniations in the left gluteal area was made.

At operation, a transverse incision was made over the tender areas through the superficial fascia. A large quantity of fatty tissue was removed and the deep fascia was incised. Bleeding points were controlled with silk ligatures. The wound was closed with three layers of interrupted sutures of black silk, with insertion of a rubber drain and a dry dressing.

The patient was symptom-free after operation, and promptly returned to work. A letter from him, four months after operation, states that he has been in fine condition and has had no pain at all.

CASE 2

A woman, aged 48 years, had had severe, intermittent back pain since a fall thirty years earlier. Fourteen years before she presented herself to me, she had undergone a hysterectomy in an attempt to obtain relief from the back pain, but this was unsuccessful. A palpable painful node was found in the left gluteal area. Relief of pain followed immediately after injection of 5 c.cm. of 1.5 per cent. "metycaine" solution. A few weeks later a second injection produced the same striking though temporary relief. Operation was performed two months after the first examination. The back pain disappeared immediately after operation, and relief has persisted to date, a period of six months.

The Surgical Problem

From a surgical standpoint removal of the palpable fat mass presents some difficulty, especially when there is considerable superficial fatty tissue. In some instances it has not been possible to see a definite mass that could be clearly differentiated as the palpable nodule; in others the definitely lobulated mass is readily discernible. When the palpable nodule (herniation of subfascial fat) cannot be clearly differentiated from the overlying superficial fat, a wide dissection of fat is made down to

* See p. 198.

the gluteus maximus muscle (Figs. 4 and 5)*. After excision of this fatty mass, the fascial layer is carefully explored. In some instances the weak point through which the herniation occurred can be determined, and, if so, this is sutured. I prefer usually to close the skin with a subcuticular alloy steel wire, No. 30.

Pathological Findings

The pathological findings in these cases are not of great significance, except that their negative character adds weight to the anatomic explanation of the symptoms. The specimen removed usually consists of mature adipose tissue, sometimes definitely lobulated. In some instances, the lobule of fat has a pedicle, probably the result of long-standing strangulation of the fat hernia. The mature, homogeneous fat (Fig. 6)* is often supported by strands of sparsely cellular, collagenous connective tissue. In some, no degenerative change nor inflammation are found. In others, the fat and collagenous tissue are oedematous and hyperaemic, and may be infiltrated both focally and diffusely with exudative cells, usually chiefly lymphocytes. In one instance in this series, nerve tissue was found in the fat lobule.

The Rôle of Trauma

From the anatomical studies, it seems probable that herniations of subfascial fat may exist potentially or actually in many persons without causing severe symptoms. The rôle of trauma in initiation of symptoms is impressive. When the distention of the fat lobule, owing to protrusion through the fascia and pressure from injury or other cause, is of sufficient degree, the blood supply to the fat may be interfered with, and oedema with occasional haemorrhage occurs. These changes evidently initiate the symptoms. It seems plausible that, with subsidence of haemorrhage and focal oedema in the fat lobule, there may also be subsidence of symptoms, with later recurrence following even a slight precipitating strain. From the histories related by some patients, this would seem the most likely course of events and would also explain spontaneous remissions, and those following massage or some other form of physical therapy. In others, in whom the disability is more or less chronic, it would appear that the oedematous condition does not subside sufficiently to bring relief, and the herniation becomes fixed, perhaps, with development of fibrous tissue in the fatty mass.

* See p. 199.

Sex Incidence

The majority (approximately two-thirds) of the patients in this series were women. Since the first seven patients I observed were all women, I thought at first that perhaps the condition was confined to females. However, all Copeman and Ackerman's patients were men, and I have now observed thirty-six men suffering from this type of low back pain, and have operated on eleven of them. In his report on the incidence of fatty nodes in the sacro-iliac region in hospital patients, Sutro commented that while they were sometimes noted in thin persons, the incidence in stout women past middle age was generally highest. This observation agrees with my clinical experience with low back pain attributed to herniations of subfascial fat, in which two-thirds of the patients were women (see Table).

TABLE
HERNIATION OF SUBFASCIAL FAT

Total number of cases (male, 36; female, 73)	109
Trigger points of pain	109
Relief by injection (temporary)	104
Operation performed	37
Relief following operation	33

Summary

1. Anatomic and clinical evidence is presented that cases of severe low back pain in which painful nodules can be palpated are due to herniation of subfascial fat through the deep layer of the superficial fascia.

2. Temporary relief was obtained by injection of the painful areas with anaesthetic solution in 109 cases of this type.

3. In thirty-seven cases the herniated fat was removed surgically, and in thirty-four there has been complete relief of all symptoms persisting to date (periods ranging from six months to nearly three years).

4. This clinical entity is not uncommon, and its recognition is simple. The presence of a painful nodule, with disappearance of pain after injection with anaesthetic solution, is diagnostic. Surgical treatment in these cases results in continuous relief of severe back pain that may have been disabling for long periods.

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(For Illustrations of this Article see pages 198 and 199)

DISCUSSION OF THE PAPER BY RALPH HERZ*

HERNIATION OF SUBFASCIAL FAT AS A CAUSE OF LOW BACK PAIN

BY

PHILIP S. HENCH

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Surgeons, physicians, and orthopaedists should all have an understanding of the subject of the preceding paper by Dr. Herz, to whom belongs the credit of presenting the first public confirmation of the recent important work of Copeman and Ackerman (1944). I have had the opportunity of reading the manuscript of further work, to be published soon in the *Annals of Internal Medicine*, in which Copeman and Ackerman have extended their views on the possible relationships and distinctions between these fat herniations, fibrositis, and panniculitis, and I shall, therefore, discuss these relationships briefly.

If you ask a senior medical student, "What is the pathology of acute muscular rheumatism, of acute lumbago or of acute wry neck?" you will generally see a puzzled look come over his face and you can almost hear him saying to himself, "What is it, anyway? Why haven't I been taught the pathology of such a common condition?" In his confusion he has plenty of company, including that of many rheumatologists. Is there an intense inflammatory hyperaemia or engorgement? Is there an acute cellular reaction? If so, is it in the muscle cells themselves or in the fibrous supporting tissue? What is the pathology of chronic muscular rheumatism or chronic lumbago? We are pretty vague on that, too, even though for the past hundred and thirty years some physicians have been supplying certain answers.

Early Work

In 1816 an Edinburgh physician, William Balfour, first described in cases of chronic muscular rheumatism definite fibrous thickenings, painful on pressure, and from which pain shot to neighbouring parts. Although they were later described by others, they did not gain much attention until 1904 when Sir William Gowers, considering the underlying pathology of muscular rheumatism, coined the term "fibrositis", believing that it was more appropriate than "myositis" since the muscle cells themselves showed no notable pathological alteration. These fibrous thickenings were described by Stockman in 1904, and particularly in 1920, so that in Great Britain for at least twenty-five years the concept of fibrositis has been widely accepted. Since 1923 my colleague, Dr. Slocumb, and I have tried to interest American physicians at least in the clinical syndrome of fibrositis. We have frankly recognized our limited knowledge of its pathology, and have not

been surprised to find considerable scepticism even among certain American rheumatologists. This scepticism arises from the simple fact that in many cases of muscular rheumatism or supposed fibrositis many physicians have been unable to feel, much less to isolate surgically, any fibrous thickenings. Indeed, some writers have dismissed fibrositic nodules as being "accessible only to the fingers of faith", and have called fibrositis a disease which English physicians talk about but which American surgeons and orthopaedists cannot confirm.

Fibrous indurations have been described as non-nodular (bands, tracts, sheaths) or nodular. Of the latter there are presumably three kinds: large nodules (generally in fibrous aponeuroses), small nodules (generally in muscle) and "myogeloses", small, sharply localized regions of hardening in muscles which are "negative" on biopsy, presumably because they merely represent small localized muscle contractures related to chemical (not inflammatory) changes not visible under the microscope.

Personal Work

Through the years I have had my full share of disappointments when trying to find the "classical fibrositic nodules", especially in cases of painful backs with negative radiographs. Often I could feel no nodules; sometimes I felt one or many "nodules" but on biopsy found nothing very impressive. But on innumerable occasions I have easily felt in the lower back, especially in the pre-sacro-iliac region, nodules singly or in clusters, small, or even large enough to push out the overlying skin. Sometimes they were fairly fixed; many times they were quite movable. Some were tender; many were quite painless, at least for the time being. Assuming that here at last I had found large subcutaneous fibrous nodules, I asked Dr. Ghormley and other orthopaedic colleagues to remove some that were tender. All we found were lumps of normal-looking fat. Sometimes the patients' symptoms were relieved, sometimes not. We remained puzzled, because our dissections were too limited to reveal the true nature of the nodules and their relation to underlying fascia and fat.

Recent Investigations

In 1935 Sutro, then an orthopaedic research fellow in New York, explored the subject more thoroughly, but he also "missed the boat". Among 170 unselected hospital patients suffering from various complaints, he found subcutaneous fatty

* Read before a meeting of the American Medical Association, San Francisco, California, July 1-5, 1946.

nodes in the sacro-iliac region in 94 patients (55 per cent). One third (33) of these 94 patients had low back pain. In some the nodules were tender; in others they were not. Sutro removed some of the nodules but found no pathological alteration. Because of this, and because the removal of the nodules failed to cure some of the patients, Sutro concluded (despite the relief in some cases) that the fatty nodules were unrelated to the symptoms. He passed them off as merely protective buffer pads. Now, at last, thanks to the careful dissections of Copeman and Ackerman and to the confirmatory work of Herz, we know much more about the significance of these fibro-fatty nodules. They are quite common. When they are tender, when pressure thereon reproduces the patient's complaints, treatment is indicated and may relieve many heretofore misunderstood and unrelieved backaches.

Copeman and Ackerman described three types of fat herniations: non-pedunculated, pedunculated, and foraminal. In their two papers they described twelve cases with non-pedunculated herniae, three of the pedunculated type, and three of the foraminal type. But in their second (unpublished) paper they described three cases in which they relieved symptoms by removing painful fat nodules which were not herniated. Apparently fat lobules may at times become quite painful and tender because of oedema or other pressure, without herniation. Copeman and Ackerman dissected lobules of fat divided, by firm fibrous septa, into small compartments, each containing a few lobules. Subfascial fat may exist under tension (without herniation) either as a result of "positive swelling" in the fatty tissue, such as from oedema, or by the contracture of investing fibrous tissue. It was concluded that such fatty lobules under tension may be related to painful panniculitis, and in certain situations may represent the first stage of a process of which the subfascial herniations represent a later, comparatively advanced stage.

As stated before, one will often find fairly large painless fatty nodules in patients without concurrent backache; in such cases the nodules may be the harmless residues of old, unremembered occurrences. When one finds tender nodules in the lower back of patients with "backache" or painful back muscles, if the nodules are small one may wonder whether they are small fat herniations, non-herniated fat lobules under tension, or "true subcutaneous fibrous nodules". If the nodules are fairly large and movable, they are probably fat herniations. Even so, one must not conclude hastily that they are the sole cause of the patient's complaint. The tender herniation may be coincidentally associated with some other condition, such as sacro-iliac arthritis (as in one of Sutro's cases), or intramuscular fibrositis (as in one of the cases of Copeman and Ackerman). Pressure on some of the tender nodules produces only localized, not radiating, pain, and does not fully reproduce the patient's complaint. If pressure on the nodule reproduces the patient's full complaint, one may hope that its treatment will

cure the patient. To confirm the diagnosis before giving further treatment, one may do as did Copeman, Ackerman, and Herz, apply the therapeutic test of an injection of novocaine. Temporary relief of the patient's symptoms represents a positive test, but a negative test may represent merely an injection inaccurately placed.

The treatment of such tender fat nodules need not necessarily be surgical. Copeman and Ackerman admittedly removed the nodules surgically for purposes of clinical demonstration. Note that Herz operated on only 37 of his 109 cases. In their unreported paper Copeman and Ackerman state their belief that surgery is not indicated in most cases and that "relief may be afforded by other less drastic measures". They believe that for the first time the use of heat, massage, and motion in such cases has been rationalized. Heat may increase the blood supply and reduce the congestion, oedema, and tension in the fatty lobules. Massage may reduce the oedema or even break up investing, pressure-producing fibrous tissue. In a case of acute lumbago presumably due to a sudden herniation of a fat lobule, an injection of novocaine may disrupt the fatty nodule by hydrostatic pressure, or may, by relieving pain, allow the resumption of normal muscular movement which may reduce the protrusion "spontaneously". Physicians, patient souls, will, therefore, probably treat such cases conservatively, but the realistic, impatient surgeons will probably decide, "out with it", and treat them surgically. Indeed, in selected or stubborn cases prompt surgical treatment of the nodules may save time and money. Interesting in this connexion is the new technique of Copeman and Ackerman, whereby the nodules are not actually removed but are "teased" surgically with a special cutting needle by which the nodule is separated from its pedicle of encircling fibrous tissue and disintegrated and the tension relieved.

An interesting parallelism exists between the development of our knowledge about herniated fat, and herniated intervertebral discs, as a cause of low back pain. In both instances the ectopic material was removed by early workers who were quite unaware of its exact source or the mechanism whereby it produced symptoms. After the usual phases, in which herniated discs were over-enthusiastically accepted as the cause of most backaches and were later regarded with disillusionment and undue scepticism, we now regard herniated discs as one definite but statistically minor cause of backache. Is it too much to hope that these "new" fat herniations will be handled temperately from the beginning and not removed uselessly and over-enthusiastically? It is certainly premature for us to conclude now that all tender subcutaneous nodules are fatty herniations, or that such fatty (not fibrous) nodules explain most cases of "fibrositis".

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PRESENT SWISS CONCEPTS OF RHEUMATISM AND PHYSICAL MEDICINE*

BY

VICTOR OTT

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This paper is intended as a report on some results of recent work in physical medicine and rheumatology in Switzerland. Since 1940 education in physical medicine, including medical hydrology and climatology, has been compulsory for all medical students. Thus there are chairs for physical medicine in all medical faculties; three of these are professorships, yet several institutes for physical therapy are dependent upon other hospital departments. At Geneva and Basle there are separate departments; but only at Zurich is there a fully independent clinical institute with departments for in-patients and out-patients.

As the recent investigations of the Institute for Physical Therapy at Zurich represent an important part of the work done in the field of physical medicine and rheumatology in Switzerland during the past years, I shall give a brief survey of this work. The chronic rheumatic diseases are a very important object of physical therapy; later on we shall speak about the reasons for this fact. Thus, an essential part of the work on which I have to report deals with problems of rheumatism.

The Importance of Rheumatism in Public Health and Social Medicine in Switzerland

The importance of rheumatic diseases in the public health and national economy of Switzerland was shown by the investigations of Bruck (1939). Some of the essential results of this extensive work are given in the following summary.

In the group of the employees of the Swiss Federal Railways, i.e. more than 10,000 men between 15 and 64 years of age, there were in one year 1.14 days of illness per 100 working days on account of rheumatism, but only 0.14 days of illness on account of tuberculosis. The full invalidism rate is 3.6 days for rheumatism, but only 0.07 days for tuberculosis. Thus, the ratio of invalidism on account of rheumatism compared with that of tuberculosis was as high as 51:1; in those cases who went back to work, the length of treatment, compared with tuberculosis, gave a ratio of 7.9 to 1. With suitable methods it was possible to make from these statistics an approximate survey of the economic consequences of

rheumatism for the whole working population of Switzerland between the ages of 15 and 64 years. In 1934-5 the treatment costs for rheumatic diseases were 18 million Swiss francs, the loss from transitory incapacity 66 millions, and the loss from early invalidism about 155 million. Considering the devaluation of money, the result at the present time would be an annual loss of at least 330 million Swiss francs, i.e. about £19,000,000 caused by rheumatic diseases.

The survey of the years 1925 to 1935 showed a somewhat different, but equally tremendous average result: morbidity and incapacity rates on account of rheumatism were as high as 21%, the tuberculosis morbidity as low as 0.59%. Thus, in these years, the morbidity from rheumatism was 36 times greater than that from tuberculosis, while the treatment time was 4.5 times greater.

These figures take into consideration only peripheral rheumatism. But diseases of the circulatory system play a great part in morbidity and mortality; the latter is in this country about 50% higher than for tuberculosis and cancer together. It is certain that a high percentage of these diseases are caused by rheumatism (Dietrich, 1938; Edström, 1935), but until now there has been no safe basis for an exact statistical investigation of this problem.

Furthermore, Bruck's investigations showed the importance of harmful conditions in various types of work for the pathogenesis of rheumatic diseases, whereby the injury seems mostly to be caused by cold, wet, and draughts.

Finally, the allocation of health insurance money for the treatment of rheumatic diseases is much smaller than that for tuberculosis. In spite of the fact that the morbidity is much greater, the patients suffering from rheumatism have not yet got the same financial help for treatment as those suffering from tuberculosis.

Thus, these investigations demonstrate the enormous importance of rheumatism to the public health in Switzerland. Beyond their purely scientific interest, they also have practical consequences: firstly, they have stimulated the interest of a wide group of the medical profession, and they have been responsible for an increase in the efforts to improve the prophylaxis and treatment of rheumatism within the framework of social medicine.

* Lecture delivered at the Annual General Meeting of the International Society of Medical Hydrology, Buxton, October 6, 1946.
† Prof. K. von Neergaard, Director.

Furthermore, they have demonstrated to the public the important rôle of physical medicine, and, finally, they have shown the great necessity for medical research in this field of pathology.

Clinical Investigations on Rheumatism Problems

From the clinical point of view, the problem has been especially treated by von Neergaard (1939). Besides papers on detailed clinical subjects of rheumatism, this author has dealt particularly with the question of the aetiology of rheumatism, a problem that is as important for prophylaxis as for treatment in rheumatic diseases. This work was essentially based upon clinical facts that may be found in the individual patient. The principal results which concern at any rate those patients living in our region and coming for treatment to our clinical departments may be summarized as follows.

Remissions and exacerbations.—From the clinical point of view, the term "rheumatism" as a symptomatological term for all those diseases characterized by wandering pains in the joints and fibrous tissues is insufficient. It is preferable to call conditions of specific aetiology causing similar symptoms by the name of the disease concerned. They are a part of the differential diagnosis, but they are not identical with the rheumatic diseases themselves. The diagnosis of rheumatism is based upon the characteristic signs of the rheumatic disease itself. These characteristics are to be found not only in the actually existing state of the organs, but also in the peculi-

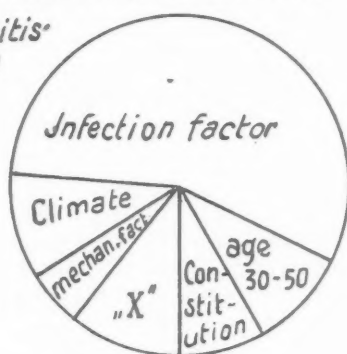
arities of the pathological course. These peculiarities are, above all, the change between remissions and exacerbations, as well as the great dependence of the conditions upon physical influences, such as weather, environment, and employment traumata. The diagnostic considerations comprising the factor of time become, therefore, dynamic, and are superior to the mere static concept.

Focal infection.—Focal infection with streptococci does exist, but it is a relatively rare condition. In most cases it may be differentiated from essentially rheumatic diseases by the peculiarities of its clinical picture. The following facts support this statement. Surgical treatment of the so-called foci is a failure in the majority of cases. Furthermore, chronic infections with streptococci take a much steadier course, they are less dependent on exterior physical agents, and they can be healed by removing the focus. Finally, their haematological and radiological changes are different from those in typical rheumatic cases.

Allergy.—The term "allergy" should not be used as a slogan to explain rheumatic conditions. There are several weighty arguments against the theory that rheumatism is nothing but an allergic tissue reaction to absolutely non-specific allergenic factors; a theory which was particularly represented by Klinge (1933). First we must remember that Aschoff (1934), who found rheumatic granuloma, held the opinion that the granulomas produced by non-specific sensitization are not identical with those found in rheumatic fever. On the other hand it is very difficult to explain rheumatism as a merely allergic tissue reaction, since the clinical picture is so well-defined and characteristic, and since other pathological conditions with a specific clinical picture are generally produced by specific aetiology.

I. Rheumatoid arthritis

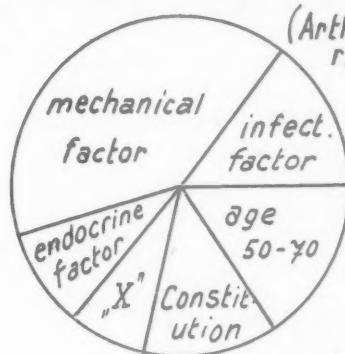
(Polyarthritidis chron.rh.)



Asthenic type.

II. Osteo-arthritis

(Arthronosis rheum.)



Pyknic type.

III. Climacteric arthritis

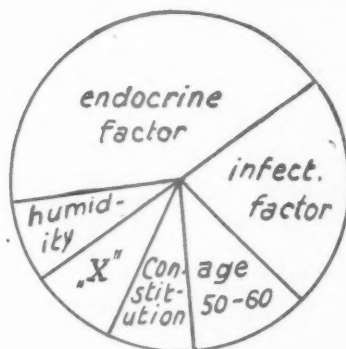


FIG. 1.—Spectra of pathogenic factors in various forms of chronic rheumatism (after von Neergaard, 1939).

Virus infection.—Naturally, allergy, i.e. a change of pathological reaction, plays a certain part in a chronic disease like rheumatism, as well as in tuberculosis, etc. Nevertheless the clinical worker may put the question, which pathogenic factor is most important for the sensitization? The history of rheumatic patients now shows a remarkable coincidence in the time of onset of rheumatic exacerbations with catarrh of the respiratory tract and with influenza. There seem to be, clinically as well as serologically, connexions between the common cold and influenza both of which are virus diseases. Von Neergaard, therefore, holds them to be a common group of diseases. On the basis of a thorough clinical study, the author regards "vulgar" rheumatism, in its peripheric as well as in its visceral form, as a chronic, systemic form of this cold-influenza-infection.

It must, however, be taken into consideration that the aetiology of rheumatism is not a simple, directly caused one. We find, on the contrary, a spectrum of factors, in which the importance of each factor is variable (Fig. 1). Sometimes the infection is most important; in other cases it is the constitution, endocrine disorders, or physical environmental agents. The factor of infection seems always to be indispensable, but the outbreak of the disease itself takes place only when various conditions coincide. The pathogenesis of rheumatism is, therefore, absolutely conditional.

Infection with the common cold virus is quite ubiquitous in our latitudes. Large-scale prophylaxis is, therefore, out of the question. Furthermore, immunity against this illness is only relative: there is no permanent immunity. Remissions and exacerbations in the chronic course of the disease depend largely on physical (mostly thermic) factors. For this reason we speak of this special group of diseases as "colds".

The Importance of Physical Medicine in the Treatment of Rheumatism

The prophylaxis and treatment of colds and rheumatism does not, however, consist only of avoiding physical noxiousness: experience shows that by physical treatment, especially with thermotherapy and hydrotherapy, these diseases can be influenced more effectively in the majority of cases than by medical applications; it may even be said that physical medicine is here the supreme method of treatment; but we need to dispute this claim more precisely. In spite of numerous investigations into certain physiological reactions on physical treatment, we have hitherto been at a loss to explain theoretically the empirical efficiency of physical therapy in the case of certain infectious diseases. The following researches are a small contribution towards the solution of this problem.

For the last few years, the writer has been trying to explain by experimental methods the efficacy of the Finnish Sauna bath. Its effects may be regarded as characteristic of physical methods. In this respect we should, however, not lay too much stress on the various single results, but essentially on their basic evaluation. The Finnish Sauna bath is a hot-air bath with a temperature from 60 to 90° C. (194° F.). The dampness of the air

is, on the whole, very low (5 to 15%, estimated with the wet bulb), but by means of steam production it can be increased considerably for short intervals. After a bathing time of about 10 to 30 minutes, a short refrigerant with cold water is taken, in winter even with snow.

In the heated room of the Sauna not only is an intensive sweating taking place, but also a slight hyperthermia. The body-temperature may rise within 20 minutes to

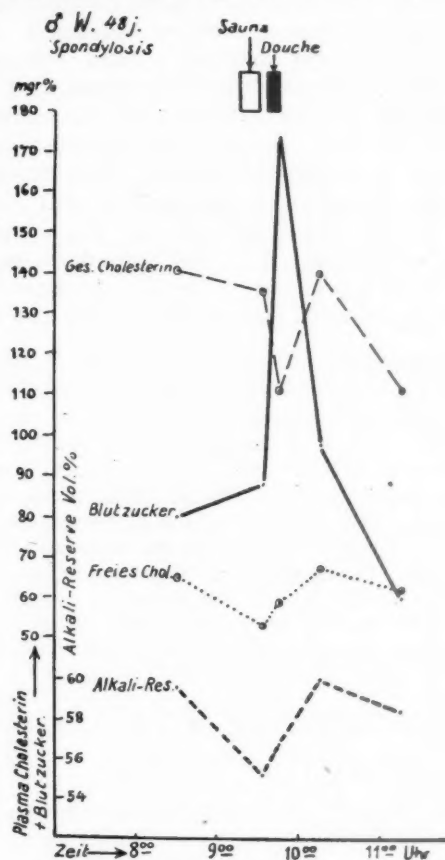


FIG. 2.—Influences of a Sauna bath followed by cold douche, on blood-sugar, plasma cholesterol, and alkaline reserve. Male patient, aged 48 years, suffering from osteo-arthritis of the spine, fasting. The blood-sugar curve shows a short but intense sympathicotonic stimulus, with its maximum immediately after the cold douche. Note the biphasic form of cholesterol and alkaline reserve curves, showing the same effect. The fall of alkaline reserve cannot be explained by hyperventilation, which did not take place. (From Ott, *Die Sauna*.)

above 39.5° C. (103° F.). In connexion with this and the following refrigerant, big changes of the autonomic regulations take place, as is demonstrated by analyses of blood sugar, alkali reserve, plasma cholesterol (Fig. 2) blood count, electrocardiogram (Fig 3*), etc. All these regulations are subject to the influences of the autonomic nervous system and of the endocrine glands, connected therewith. They may, therefore, be taken as indicators of the tone of the autonomic system.

In trying to understand the reactions of the body as a result of the strong thermic stimulants in and after the hot-air bath we come to the following

* See p. 200.

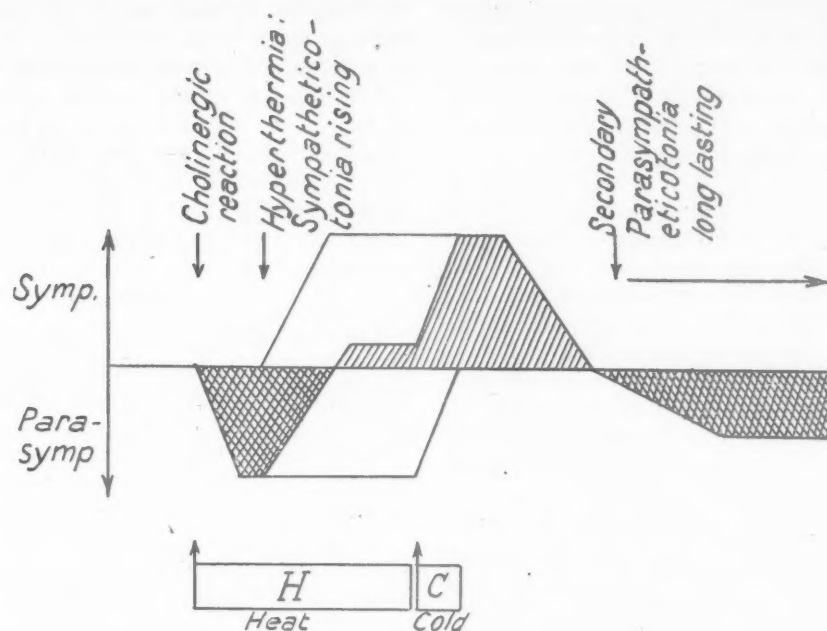


FIG. 4.—Interference of cholinergic reaction with sympatheticotonic effects produced by a combined physical treatment, such as hot-air bath (Sauna), followed by a short, cold douche. For explanations, see text. (After Ott, *Die Sauna*.)

conclusions (Fig. 4). Firstly, as a physiological regulation, we get a reaction with vasodilation of the skin and sweating that is to say, a cholinergic or, in the functional sense, a parasympathetic reaction. The physiological body temperature regulation is, however, for physical reasons, insufficient in the hot-air room. Hyperthermia occurs, stimulating the sympathetico-adrenal system; this is particularly well demonstrated in the electrocardiogram. (As regards the sympathetico-tonic variations of the electrocardiogram, we must refer to the papers of Nordenfelt, 1942; Leitner and Steinlin, 1943; Spühler, 1947; and others). At the same time the physiological regulating mechanism continues, since the thermo-regulation is still focused on the normal bases of body-temperature, a condition contrary to that found in fever with infectious diseases.

After the application of a refrigerant, the stimulation of the sympathetic system remains somewhat longer than the parasympathetico-tonic tendency towards cooling; the cold stimulant may thus even cause an additional sympathetico-tonia. Only later an undulating fluctuation of the autonomic tonus occurs on the other side. This parasympathetic hypertonia may last for hours or even days, as could be shown by studies on the cold reactions of the skin vessels (Jung, 1946).

These experimental findings offer a new proof that physical treatment, such as a hot-air bath, can lead to changes of the autonomic regulations which are just as strong as those that have for a long time been known to occur pathologically in the case of infectious fevers.

Secondly, they explain much better the well-known fact that reaction from physical treatment depends

on the individual tonus of the autonomic system, and is much less regular than, for example, reaction to the intravenous injection of pyrogenic protein. Physical hyperthermia induces a pathological state with irritation of the sympathetico-adrenal system, the physiological cholinergic reaction being maintained at the same time (at least as long as no heat exhaustion occurs). The physical agent is, therefore, acting as an "amphotonic" stimulus, i.e. on both sides of the autonomic system, and the actual effect is dependent upon which of these two systems is reacting more easily to this stimulus. The reaction, individually as well as on the various organs, may be different. Thus it can be explained why, for example, in certain cases we may see at the same time sympathetico-tonic changes of the electrocardiogram and a parasympathetic depression of the blood sugar.

Thirdly, in order to explain the empirical effect upon infectious diseases, new points of view may be shown, which may be valid not only for the hot-air bath, but, in a modified form, also for other physical and hydrological measures.

It may be concluded *a priori*, considering the strong vegetative changes in fever, that the autonomic nervous system plays an important part in the course of natural infectious diseases. The physiologists have already for a long time been paying attention to this; I may remind readers in this respect of Cannon's (1926) emergency theory of the sympathetic system. During the last years, however, the question has to a vast extent been cleared up by experimental pathology. In this connexion, the researches of Belak (1941), W. Frei at Zurich (1945), and others have shown that a non-specific,

quickly-working resistance reaction, such as phagocytosis and mobilization of the natural antibodies, is hastened by the sympathetic system, whereas specific immunity reactions (production of antibodies, etc.) are stimulated by the parasympathetic, that is, they are cholinergic reactions.

Now, physical therapy is a typical "reaction therapy" (von Neergaard, 1946), since it causes, as we have seen, strong reactive changes in autonomic regulation. With intensive treatments, such as the hot-air bath—i.e. with short physical hyperthermia—a short sympathicotonia occurs, and afterwards a longer-lasting parasympathicotonia follows. This is a special case, but with any other physical treatment, especially with spa treatment and hydrotherapy, we have to reckon with strong changes of the autonomic tonus, as has already been partly proved by experiments of various authors.

We believe that it is more important for the understanding of the effects of spa treatment and physical therapy to consider the autonomic reactions, with their effects on resistance and immunity, than to overrate the possibilities of "non-specific protein therapy", which have not yet been sufficiently investigated. These autonomic reactions also help us to understand why physical medicine is particularly valuable in cases of catarrhal and rheumatic diseases. We must remember that these are infections against which no specific chemotherapy or any serological treatment exist, and for which the relatively benign virus is less responsible than failure of natural resistance or immunity. The reactive changes of the tonus of the autonomic system now proves to us indirectly that by physical treatment it is possible to enhance the natural defence functions of the body against infection. Whether more stress is to be laid on a short, intensive irritation of the sympathetic system, or a longer-lasting hypertonia of the parasympathetic, is dependent on the individual disease, on the phase of the infection, and on the "starting level" of the autonomic tonus. It is thus possible to stop in its initial stage a slight infection, such as a catarrh of the respiratory tract, by activating the sympathetic, non-specific resistance reactions. Moreover, frequent stimulation of the sympathetic creates a certain training of the non-specific resistance. Subacute and chronic infections, however, may be activated by a sympathicotonic irritation, which may prove to be useful, but in certain cases (e.g. tuberculosis) it may also be harmful. With chronic remittent infections, which interest us particularly at the moment, as, for example, chronic rheumatism, the healing is done essentially through the strengthening of specific immunity functions. In certain phases of physical therapy a distinct increase of the parasympathetic tonus may be shown, and, therefore, the enhancement of the immunity of

the body by physical therapeutic measures is comprehensible from the scientific point of view also, though this had been ascertained empirically long ago.

The increase of the natural resistance and immunity of the organism is, as we know, one of the principal tasks of physical medicine. The latter differs from other methods of treatment in the manner by which this aim is attained: it is not the pathogenic agent that is the object, but the reacting organism.

Summary

After a brief review on the present status of physical medicine at Swiss universities, some recent investigations at the University Institute for Physical Therapy in Zurich are referred to.

Rheumatism and catarrhal diseases, and the basic foundation of their physical treatment, are the principal objects of these investigations.

Statistical researches (Bruck, 1939) show the rôle of environmental influences as pathogenic factors in rheumatism, the tremendous importance of rheumatism for Swiss national economy, and the consequences of these facts in prophylaxis and social medicine.

From the clinical point of view (von Neergaard, 1939), rheumatism is not a symptomatic term but a pathological entity; its characteristic features also form a strong argument against the theory of the non-specific allergic pathogenesis of rheumatism. Focal infection is rare, and can be differentiated from "vulgar" chronic rheumatism, which has evidently an aetiology identical with the catarrhal diseases of the respiratory tract. Its pathogenesis, always depending on various factors, is a conditional one.

The function of physical methods is demonstrated by experiments made by the writer on effects of the Finnish Sauna bath. Acting as a "reaction therapy", physical methods produce changes in the tonus of the autonomic system, which may explain the therapeutic value of these treatments both in colds and allied diseases and in chronic rheumatism.

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(For Electrocardiogram illustrating this Article see page 200.)

EPIDEMIC MYALGIA AFFECTING THE TRAPEZIUS MUSCLE

BY

DONALD WILSON

In 1934 Sylvest published a monograph in Danish entitled "Epidemic Myalgia—Bornholm Disease" in which he described a morbid condition of the intercostal and abdominal muscles, outbreaks of which occur in sufficiently large numbers in certain localities to reach epidemic proportions. The term "epidemic myalgia" was used, on the suggestion of the late Sir George Buchanan, in order to avoid a slur upon the pleasant island of Bornholm. In his comprehensive monograph Sylvest collected all the known descriptions of this disease that had appeared before his own publication, and since that date outbreaks have been recognized more readily and epidemics have been described in most parts of the world. Furthermore, several outbreaks have been observed and recorded in which the trapezius muscle has been principally involved, and which have had an appreciable morbidity rate.

Clinical Description

The morbid condition to be described differs from Bornholm disease in several important features. Only one muscle seems to be affected, there is usually absence of pyrexia, and the only complication which has been commonly described is persistent fibrositis. This syndrome may have a sudden or insidious onset, and pain is the most prominent feature, which may be maximal from the start, or which may increase rapidly in severity, reaching its maximum within a few hours of onset. It is persistent and is increased by any movement in which the affected muscle is required to contract. The pain may be lancinating or aching, radiating to occiput or down the arm; paraesthesia of the arm on the affected side has been recorded. Headache is usually occipital, and is common in both the prodromal and the fully developed stages. Pyrexia is unusual and, if present, never exceeds 100° F. Catarrhal conditions of the upper respiratory tract have had a high incidence in some outbreaks. The condition may quickly resolve, but it more usually extends over a period of from eight to fourteen days, gradually diminishing in severity. During the course of the disease complications are exceptional, but chronic fibrositis may occur as a sequel.

Description of Outbreaks

In 1935 Massell and Solomon gave the results of a questionnaire issued to 300 people employed in hospitals.

Fifty-two gave answers admitting to pain in the region of the trapezius muscle during the previous two months; they attributed the pain either to exposure to a draught or to an abnormal position in the course of their work. The authors thought that this figure was significant enough to warrant the assumption that a common infective agent had been present. In addition they were able to prove that no abnormal position had been used in many cases where this had been claimed as a cause, and that the theory of draught could not be upheld as the sole aetiological factor.

In September, 1942, Beeson and Scott published an interesting paper on the results of a survey of 1,031 people who were drawn from an A.T.S. unit, a factory, and a hospital. Each unit had two surveys, and 125 cases were collected. These authors showed that there was an alteration in the incidence of the disease. Between September and November, 1941, the living-in personnel of the hospital had an attack rate of 23.6%, and the living-out 11.6%. In the second survey (March to April, 1942) these figures were reversed, the living-in personnel having an attack rate of 11.6% and the living-out 27.3%. In their paper Beeson and Scott note that the trapezius was almost invariably involved, though other muscles might be tender. Pyrexia was not marked, though 41% had symptoms of a "common cold" at the onset. Tender nodes were present in the affected muscles in all cases. The erythrocyte sedimentation rate was not raised, and the white cell count usually showed a lymphocytosis. The authors described attempts to convey the disease by experimental methods; no definite results were achieved but it is significant that the incidence of myalgia was found to be higher in volunteers who received whole blood inoculation than in the remainder of the community.

Four other outbreaks have been observed in Service Units. Copeman (1944) has given particulars of two outbreaks which he observed early in 1942. In the first the men were housed in a hutted camp and the outbreak occurred in January, 1942; eight men were affected in a company. Two men reported sick with stiff necks; ten days later two more reported sick with similar symptoms. When the camp was inspected four more men were found who were recovering from the same condition although they had not reported sick. The symptoms were pain in one side of the neck radiating down the arm. Recovery was slow but eventually complete. Only one had catarrhal symptoms at the onset. These men fed together in an adjacent hut, but only two slept in the same hut.

The second outbreak described by Copeman occurred in a hutted hospital during February, 1942. Eight members of the staff suffered from the complaint. The incubation period varied from eight to twenty-one days. The principal symptom was pain in the neck radiating

down the arm. Paraesthesiae occurred in some cases, and mild muscular pains were found elsewhere; but attention was focused on the trapezius. The erythrocyte sedimentation rate was raised in all cases, but the white cell count was within normal limits. When one case from this group was seen a year later he was suffering from persistent fibrositis.

In July and August, 1940, the writer had the opportunity to observe a similar outbreak, though facilities were lacking for a complete investigation. Two men reported sick complaining of pain in the left scapular region radiating towards the neck. Extreme tenderness was present in the trapezius at the vertebral border of the scapula; tender nodes were also present along the superior border of the trapezius. Both men were afebrile, but complained of mild malaise which had been present for the previous two or three days. During the next fourteen days twelve other men from the same unit reported sick with similar symptoms. In all cases the trapezius was the only muscle involved, though pain was complained of either in the neck or upper part of the back. One of the first two men who reported sick stated that he had just returned from leave, where he had been in contact with a brother who had similar symptoms. In this outbreak the pain appeared to originate from an exquisitely tender focus and to radiate over the back; any movement, such as bending, sudden movement involving the dorsal spine, coughing, sneezing, and hiccupping, was very painful. (It should be mentioned that the weather was warm and sunny.)

In September and October, 1943, I was able to make fuller observation of an outbreak in a unit numbering 159. Twenty-nine cases occurred, including both women and men. Pain in the trapezius was an invariable finding; pain sometimes radiated down the arm, but paraesthesiae were not marked. Headache was a prodromal symptom in seventeen cases; catarrh of the upper respiratory tract was noted in seventeen cases during the initial stage. The erythrocyte sedimentation rate varied from 2 to 14. There was no leucocytosis, and no monocytosis. From this outbreak at least two cases of persistent fibrositis resulted.

Anatomy

It is necessary to refer briefly to the anatomy of the trapezius in relation to the symptomatology of this syndrome. The trapezius is a large, superficial muscle covering almost the whole of the dorsal region of the back. It originates from the superior line of the occiput, the cervical and dorsal spines, and the inter-spinal ligaments; from this extensive origin the muscular fibres converge towards the shoulder, to be inserted continuously, from before backwards, in the outer third of the posterior surface of the clavicle, the inner border of the acromion process, and the spine of the scapula. Thus it will be seen that the trapezius will be involved in any movement of the head, neck, dorsal spine, or scapula. A painful condition of the trapezius may cause the complaint of pain in the neck, shoulder, or back.

Aetiology

In discussing the aetiology of this syndrome it is important to remember that a number of people involved in the outbreaks reviewed above had not thought their symptoms severe enough to warrant reporting sick, and it is possible that the actual rate is higher than the figures quoted, particularly in towns.

Beeson and Scott (1942) quote a different incidence for the disease in various groups of people. In the hospital unit, during the first survey the living-in personnel had an incidence of 26% and in the second survey one of 11.3%, whilst amongst the living-out personnel the incidence rate was doubled in the second survey. In the A.T.S. unit, which had twenty-four cases during the first survey, the week from December 30 to January 5 had by far the highest incidence; in the second survey only seven cases were found and the attack rate had fallen from 13.6% to 4.3%. On further investigation it was found that fifteen cases out of twenty-four came from one dormitory. These figures are suggestive of an infective agent. Attempts to transmit the disease to humans and animals are described by these authors, and although their results are inconclusive there is some evidence that this condition is infective.

In the first outbreak observed by Copeman two cases slept in the same hut but all fed in the same mess. In his second series, which occurred in a hutted hospital, eight members of the staff were affected.

Claims are made by patients and others that the sudden onset of stiff neck is due either to draughts or to an unusual posture. It is probable that in sporadic cases either of these may be the cause of the pain. Before the war of 1939-45 there was correspondence in a medical journal about "sunshine roof" shoulder, a condition in which patients complained of severe pain in the trapezii, sudden in onset, after a drive in a car with the sunshine roof open. In many light cars when the roof is opened a swift down-draught of air is directed on to the shoulders and neck of the occupiers of the front seats. It is known that a rapid rush of air has a marked cooling effect on the skin; if this is localized to one area, which may be insufficiently protected, there may be a spasm of the underlying superficial muscle, which in this case is the trapezius. It is generally recognized that use of a muscle in an unaccustomed posture may be a cause of pain in the muscle, probably owing to spasm; but the pain is usually aching in character and can be relieved by relaxation. This group, which includes the common type of shoulder pain seen amongst housewives, can be differentiated by a careful history of the pain and the activities of the complainant.

In 1942 Houghton and Jones described an outbreak of epidemic or infectious myalgia secondary to streptococcal sore throat; six members of a nursing staff had generalized muscle pains after initial pyrexia; headache was present in all cases and was very severe. The pain was not relieved by salicylates. The streptococcus recovered from the throats were of different types. The sedimentation rate was slightly raised and the white cell count showed an increase in monocytes. The findings in this outbreak are compatible with a virus infection. Houghton and Jones considered that this outbreak had similarities both to trench fever and to Bornholm disease, and they thought it might be due to a

myotrophic virus. A similar epidemic of myositis was described by Williams in 1941. In his cases evidence of neuritis and meningeal symptoms were found; again the causative organism was assumed to be a virus.

On the assumption that there may be myotrophic types of virus capable of causing various degrees of illness, it is probable that myalgia of the trapezius may be a virus type of infection which is capable of causing epidemics. The extent of the outbreaks is difficult to determine, because many people who have contracted the condition do not report it, thinking it will pass away in a short time. Usually it causes disability for a few days and then recovery is complete, but in some a persistent fibrositis results, causing a great loss of efficiency in the affected person.

Differential Diagnosis

Bornholm Disease.—Pain, usually situated in the lower intercostal and upper abdominal muscles of one side, is the principal feature. This pain is very severe and tends to be paroxysmal, as noted by Pickles (1933) in his account of the disease as it occurred in a Yorkshire dale. In addition to the intercostal muscles, pain has been described as occurring in the lumbar, pectoral, and biceps muscles. Localized areas of tenderness can be felt in the affected muscles, and the spontaneous pain which is so characteristic corresponds to these tender areas.

Polymyositis.—Polymyositis has been described by Gowers (1899), Langmead (1923), and Somers (1939), as being slowly progressive, with lack of severe pain and, eventually, with paralysis of the affected muscles. The condition may also follow the exanthemata, enteric fever, and tuberculosis. Other writers have described an acute recurrent polymyositis; most of the cases showed a high degree of eosinophilia which was not due to trichiniasis.

Neuritis.—At the onset, cervico-occipital neuritis may resemble myalgia of the trapezius very closely; but usually the tender nodes in the muscle are absent and the pain is not limited to the region of the trapezius.

Fibrositis.—In considering the differential diagnosis of fibrositis involving the trapezius, neuritis of the cervical plexus and the causes of pain referred along the distribution of the plexus must be considered. In neuritis of the great occipital nerve, which may be caused according to Wilson (1940) by such excitants as chill, wetting, or

currents of cold air playing on the part, there is tenderness along the course of the nerve combined with spontaneous pain which is increased by movement; the pain usually starts in the region of the occiput and radiates up to the vertex of the scalp. The pain due to fibrositis is not so widespread, and nerve tenderness is not so marked. Neuritis of the long thoracic nerve causes an aching pain at the lower angle of the scapula, and neuritis of the suprascapular causes pain above the spine of the scapula which is followed by wasting of the muscles supplied by the involved nerve.

Treatment

Treatment of this condition is palliative. In some cases radiant heat, infra-red rays, etc., alleviate the pain. Salicylates appear to have no effect. In very severe cases, supporting the arm by means of a sling in order to relieve the trapezius from the weight of the arm procures temporary alleviation. Injection of the tender nodes with procaine does not bring the degree of relief of pain usual in fibrositis.

Conclusion

An attempt has been made to describe myalgia of the trapezius which occurs in small epidemics and may be due to a virus. The characteristics of this condition are the sudden apyrexial onset of persistent pain, varying in severity and degree of disability; the condition may be followed by persistent fibrositis.

Bornholm disease is contrasted with myalgia of the trapezius.

This condition may be the cause of pain in the side of the neck and arm, and the recognition that it may be infective is important in preventing the spread of the disease through communities and the resulting loss of man-hours of work.

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PERSONAL EXPERIENCE WITH NEOSTIGMINE THERAPY IN RHEUMATOID ARTHRITIS*

BY

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Within the group of the chronic rheumatic diseases, rheumatoid arthritis and rheumatoid spondylitis undoubtedly constitute the most important syndromes from the medical standpoint, not only because of their symptomatology and evolution, but also because their aetiological agents are unknown and because they are, therefore, a difficult and complex therapeutic problem. No wonder, therefore, there is nowadays such a multiplicity of treatments, which vary according to the criteria and experience of each physician.

Clinicians have been working hard to find a therapeutic element which could really be relied upon in such affections, since researches into the aetiology are still yielding entirely negative results. Trommer and Cohen (1944), for instance, decided to experiment with neostigmine methylsulphate in a group of patients with various rheumatic affections, basing their decision on the fact that, from the point of view of muscle spasm and atrophy, there is a certain correlation between rheumatoid arthritis and anterior poliomyelitis, and also on the fact that in subacute and chronic poliomyelitis Kabat and Knapp (1943) reported encouraging results with the use of neostigmine, a drug that proved very efficient in the treatment of postoperative intestinal atony and of myasthenia gravis. In a preliminary paper these authors report the results registered in 19 patients, duly selected beforehand, in whom deformity, decrease of movement, and disability were present in a marked form, but with a minimum of demonstrable anatomical lesions. Thirteen of these patients, some of them with rheumatoid arthritis, responded favourably to the neostigmine therapy (subcutaneous injections, either daily, or every two or three to six days, according to the type of case). In 3 cases of rheumatoid arthritis with marked functional disability and invalidism the improvement led to functional recovery; and 2 of them, who had been confined to their beds for some time, were able to get up. In the 6 remaining patients, results were insignificant or completely negative. Trommer and Cohen state in their conclusions that neostigmine is the most efficient drug for muscular spasm in rheumatoid arthritis.

Later, Kabat (1944) used neostigmine in 53 selected patients with various affections (hemiplegia,

facial and cerebral paralysis, subacromial bursitis, and rheumatoid arthritis) complicated by chronic neuromuscular dysfunction, and in whom muscle pain, spasm, contracture, or partial paralysis were the main factors in the functional disability (cases in which the disability was devoid of an organic substratum). This group included 6 cases with chronic rheumatoid arthritis and 3 others with rheumatoid spondylitis, whose rheumatic complaints were of many years' standing, and who suffered also from severe disability. There were also 2 cases of rheumatoid arthritis in an acute stage. The first 9 patients (chronic cases) improved to some degree with the treatment, and Kabat noted a relief of pain, an improvement of motion, and an increase of the active muscular strength in the cases in which there was spasm, hypertony, or muscle pain. In the 2 cases in the acute stage the results were negative, so that the author considers the use of neostigmine in cases of rheumatoid arthritis with active inflammatory process to be contraindicated. Kabat states in his conclusions that the results are encouraging enough to warrant further investigation.

It was due to the results of Trommer and Cohen and of Kabat that we decided to experiment with neostigmine in a group of our own patients.

Clinical Material

We administered neostigmine to a group of 21 out-patients in our private practice as follows: 12 with rheumatoid arthritis, 7 with both rheumatoid spondylitis and rheumatoid arthritis, 1 with rheumatoid spondylitis, and 1 with cervical osteo-arthritis spondylitis. In these cases the rheumatic process had reached various stages of evolution. The patients were not specially selected for this type of study, but were chosen at random. However, the greatest care was taken as regards the accuracy of the diagnosis. The objective, articular conditions of all of them were favourable for experiment, for all of them (except 2, who were confined to bed), could move about spontaneously, without outside help.

Method

Each injection (subcutaneous) consisted of 2 c.cm. of a 1:2,000 solution of neostigmine (or prostigmine) methylsulphate. The injections were made twice daily, daily, or every two or three to four days according to the facilities which existed for seeing the patients. At

* Paper read before the First Inter-American Congress of Medicine (Rio de Janeiro, September 7 to 15, 1946).

the beginning we added $\frac{1}{4}$ mg. of neutral atropine sulphate in order to avoid the stimulus of neostigmine on the vagus. However, in view of the very disagreeable side-effects of atropine in the majority of our patients, we resorted to neostigmine alone, without ever noting any untoward manifestation of the drug.

When we started the present study, the greater part of our patients was already under our care, and a few only were about to start treatment. None of the patients, therefore, was given neostigmine alone, but always neostigmine associated with the basic therapy which had been prescribed according to the type of arthritis. During the period of the experiment we entirely gave up the use of analgesics.

Results

We administered a total of 260 ampoules. The results are described below.

Rheumatoid arthritis groups.—In the rheumatoid arthritis group, 9 patients were in the evolutionary phase of the affection, and 3 in its terminal stage. In 7 of the 9 cases in the evolutionary stage there was an immediate relief of the articular pain, followed by an improvement of active movement; this improvement lasted from a few hours, in the case of least duration, to 48 hours in the cases of greatest duration. In 5 of those patients, however, we noted an irregular and inconstant action of the drug, for in 3 cases the first injections produced a favourable effect, reducing the intensity of the pain, whereas after the succeeding injections we noted an exacerbation of the pain, very accentuated in 1 case, and this led us to discontinue the administration of the drug. In the 2 remaining patients, neostigmine produced a relief of the articular pain and an improvement of active movement until the twentieth ampoule, but the next ampoule in 1 case, and the following 5 in the other, did not produce any result, so that we discontinued the experiment. In the last 2 cases in the evolutionary period results were entirely negative.

Of the 3 cases in the terminal stage, the first was a patient whose hands and feet only were affected, with flexion of two fingers of the right hand due to muscle contracture, and in whom the first injection of neostigmine produced a relief of pain and an improvement of movement, followed, however, by an intensification of symptoms after the sixth ampoule. In the second case, a patient with total rigidity of the lower limbs, who was consequently compelled to stay in bed but who did not have articular ankylosis, the administration of 16 ampoules did not produce any result. And yet this was the only case of our series in which arthritis was in its inactive stage, as could be recognized by the normal values of the sedimentation rate and by the absence of joint swelling. The third case was a patient who had to stay in bed, principally because of involvement of the knees, which were in mid-flexion and painful, with functional disability. The rheumatic process, although without joint inflammation, was decidedly active, the sedimentation rate being 125 mm. at the end of the first hour. The administration of 2 ampoules of neostigmine per day did not produce any results.

Rheumatoid spondylitis and arthritis.—Of the 7 patients with both rheumatoid spondylitis and arthritis, we noted in 2 cases a slight decrease of the articular pain and a corresponding improvement of the active movement, which lasted for several hours. In 1 case there were favourable results after the first ampoule, but none whatsoever after 20 more ampoules. In the fourth case there was slight improvement after the injections (25 in all), followed by an intensification of the whole symptomatology. In the 3 last cases entirely negative results were observed.

Advanced rheumatoid spondylitis.—A patient with rheumatoid spondylitis in its terminal spondylitic stage showed constant relief after the 21 ampoules she was given. Immediately after the injection of the drug the radiating pains in the inguinal regions disappeared, with consequent greater facility in walking. The discontinuation of neostigmine was followed by an intensification of pain.

Osteo-arthritic spondylitis.—We tried neostigmine in 1 case of cervical osteo-arthritic spondylitis with pain in the trapezius muscles. No results, however, were noted after 2 injections.

In 8 of the cases in which neostigmine therapy had been followed by a relief of pain, we injected later on atropine only, in order to determine whether the sedative action obtained could be due to that alkaloid. The results of the 22 ampoules administered, however, were entirely negative.

Modification of the sedimentation rate due to the administration of neostigmine could not be discovered in any of the 20 cases of rheumatoid arthritis or rheumatoid spondylitis.

Comment

In 20 cases of rheumatoid arthritis and spondylitis submitted by us to the neostigmine therapy, we observed favourable results in 13, but such results were not regular, even in temporary relief of pain. In some patients there was marked improvement after the first injections, whereas the following ampoules produced entirely negative or even harmful results. In the 7 remaining cases (rheumatoid arthritis and spondylitis) and in one more case (osteo-arthritic spondylitis), the results were negative.

In the cases in which the action of neostigmine was favourable, such action was characterized by only temporary relief of pain, followed by an improvement of proportional duration in the joint function. In 5 of those 13 cases there was increase of pain during the period of administration of neostigmine, and in 2 other cases relief was felt after the first injections only, whereas the subsequent ampoules did not produce any result.

In none of the cases did we observe any objective action of the drug on the general or articular condition or on the sedimentation rate. And we must point out that we never administered neostigmine alone, but that we always associated it with the basic therapy commonly used in other patients. Neostigmine being a supposedly anti-spasmodic drug, it could not be expected to produce a real,

positive effect on rheumatoid arthritis or spondylitis. Because of the absence of any objective action of neostigmine upon our patients, and of the irregularity and inconstancy of its subjective effect in rheumatoid arthritis and spondylitis, we did not find it necessary to extend the treatment to a larger number of cases. Nor did we prolong the observation period, lest the effect of the basic treatment could be attributed to neostigmine, thus rendering possible an over-estimation of the real results of the drug.

Summary and Conclusions

In a group of 20 patients with rheumatoid arthritis and spondylitis in various stages of evolution

who were submitted to neostigmine methylsulphate therapy, the drug proved to have an inconstant and irregular effect on the symptomatology of pain and on the range of movement in the 13 cases which were benefited in various degrees. Neostigmine had no objective effect on either the general or articular conditions or on the sedimentation rate. In 1 case of cervical osteo-arthritic spondylitis the results were negative.

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EMPIRE RHEUMATISM COUNCIL

TENTH ANNIVERSARY OF FOUNDATION

The Empire Rheumatism Council celebrated the tenth anniversary of its foundation with a reception held in the Hall of the Society of Apothecaries, London, on Monday, October 28. It had been expected that the guests would be received by the Minister of Health and by Lord Horder, but unfortunately Parliamentary business detained Mr. Aneurin Bevan. The Chief Medical Officer to the Ministry of Health, Sir Wilson Jameson, was, however, able to take his place. The guests of honour were : His Excellency the Swedish Minister, M. B. G. Prytz ; Professor J. A. Höjer, C. M. O., and Dr. B. Strandell, Deputy C. M. O. Royal Swedish Health Department ; Dr. Loring T. Swaim of the American Rheumatism Association ; the Right Hon. Tom Williams, Minister of Agriculture ; Sir Walter Kinnear ; and Air Vice-Marshal F. P. Don.

Opening Remarks by Lord Horder

Lord Horder opened the celebrations with an informal speech as follows :

" Ladies and Gentlemen,

Let me say at the outset that this is not intended to be so much a speech-making occasion as a social gathering of members of our Council and their friends to discuss among themselves, with what measure of congratulation is warranted, the work of the past ten years, and to make, I hope, good resolutions to continue and extend that work in the future. Accordingly I shall be brief.

MESSAGE FROM H.R.H. THE DUKE OF GLOUCESTER

We have been honoured by a message from our Royal President, cabled from Government House, Canberra, through Sir Godfrey Thomas :

'As President of The Empire Rheumatism Council, I send greetings to the distinguished guests present on the occasion of the tenth anniversary of our foundation.

I congratulate the Council on the work already done, and I look forward with confidence to further success in the fight against rheumatic suffering and disablement.

(Signed) HENRY
President.'

Congratulations from American Medical Association

We have been also honoured by a number of other cordial greetings, amongst which is one from the American Medical Association, as follows :

'On behalf of the American Medical Association, I wish to tender congratulations to the Empire Rheumatism Council on its tenth anniversary celebration on October 28. The annual reports of the Council have been read with interest

in this country, and the fact that the work of the Council could be carried on as well as it has been in the face of the war constitutes a tribute to you and your colleagues.

The American Medical Association extends to you our best wishes for success in the attack on the problems of rheumatism in the British Empire.

(Signed) GEORGE F. LULL.'

DOMINION MESSAGES

We are saluted by the High Commissioner of Canada, representing a Dominion in which, I am glad to say, there is a Council affiliated with our own in the campaign against rheumatism.

From the other great Dominions we have assurances of similar participation in that campaign.

SUPPORT FROM THE MINISTRY OF HEALTH

Mr. Bevan, the Minister of Health, is unfortunately prevented from attending. The affairs of the gallant principality of Wales are before the House of Commons this afternoon and demand his presence there. In accepting, some days ago, an invitation to this reception, he wrote that 'he would be delighted to come'. I take that as a good omen. I have every reason to think that he intends, during his term of office, to take effective action for the relief of the great multitude of sufferers from rheumatic diseases. For far too long a term, these people have been 'the forgotten folk' of an otherwise admirable system of public health administration. Provision of effective treatment has been possible for a small percentage only of the scores of thousands of those afflicted. We look confidently to Mr. Bevan to remedy that, for we know him to be a man of vigour, ability, and strong determination to get things done.

By happy choice Mr. Bevan has nominated Sir Wilson Jameson, Chief of his Medical Staff at the Ministry of Health, to be his deputy. We may hope to hear some words from him to-day, if not of commendation for output, then of cheer for our future. I shall ask Sir Wilson to follow me.

REPRESENTATIVES FROM SWEDEN

I have also to welcome two distinguished representatives of the National Health Services of Sweden, a country which has set such a good example to the rest of the world in the provision for rheumatic patients.

AMERICAN RHEUMATISM ASSOCIATION

There is also with us a representative of the American Rheumatism Association, which works in cordial co-operation with our Council. Dr.

Loring Swaim's presence is endorsed by a message from his Association :

'We of the American Rheumatism Association commend most highly the Empire Rheumatism Council for its splendid work during the past ten years. This work has been most useful to the divisions concerned with the administration of good medical care for rheumatic subjects, and the encouragement of both clinical and fundamental research. We wish your Council an even greater record of accomplishment during the next ten years. With heartiest congratulations to you all.

(Signed) WALTER BAUER.

President American Rheumatism Association.'

Let me conclude with a very brief acknowledgement to my colleagues, medical and lay, who have given such distinguished and self-sacrificing help to the work of the Empire Rheumatism Council. It would take us far into the night if I were to attempt to record names and particular services rendered. I must be content with this note of general appreciation of their loyal and tireless help. When, ten years ago, we organized the Empire Rheumatism Council, with its impressive recruitment of medical and lay supporters, and when the press, both of the home country and of the Dominions and Colonies, contributed its all-powerful help in arousing public opinion, I felt for the first time that there was hope for a project that had long been in my mind. This project was to make a concerted attack, by way both of research and of treatment, against this enemy to public and private peace and economy. It could not be foreseen then that the mania of one man would so infect a great nation as to shatter the peace of the world. The harsh struggle for survival of our British Commonwealth and its allies inevitably affected our work, as it did that of other bodies devoted to the only war which is sanctioned by reason and good intent—the war against the secular enemy of mankind, preventable disease. But, in carrying on as we decided to do under most serious difficulties, I believe—and I say so with due humility on behalf of my colleagues and myself—that we have done effective work, the fruit of which will be garnered in the near future."

Speech by Sir Wilson Jameson

Sir Wilson Jameson then spoke as follows.

"As Lord Horder has explained I am here deputizing for the Minister of Health, who is detained by parliamentary business. The lot of a senior civil servant is not always a happy one, and I feel it unhappy to-day when I know that most of you came to hear Mr. Bevan, and instead you are going to hear a few remarks from one of the medical bureaucrats. The Minister is very sorry indeed that he could not be here to-day, for this problem of rheumatism is one that has engaged his personal interest, but he has to wind up for the Government in a House of Commons debate on Welsh affairs.

This function is in celebration of the tenth

anniversary of the Empire Rheumatism Council. What can I say about the Empire Rheumatism Council? It has had a very active life of ten years in spite of the fact that a number of those years were war years. It has done a great deal to stimulate public interest in rheumatism. It has been very helpful in informing medical opinion on the subject. We are very grateful to you, Lord Horder, for the active part that you have played in all this, and we are grateful also to Dr. Copeman who has served the Council as secretary. The Manual which you have put out by the Council, together with the primer by the American Association are, I think, the best guides in English as to what should be done in the problem of rheumatism. You have been of direct help to the Ministry of Health. The Minister has a Medical Advisory Committee, which has a subcommittee on rheumatism, and this has put forward certain recommendations for the guidance of the Minister in connexion with any official plans for an attack upon rheumatism. That committee arrived at its conclusions very largely upon the basis of what you and Dr. Copeman, your indefatigable secretary, put forward. The plan is that we should have certain centres for research and diagnosis, which should be closely linked with university medical departments, also that there should be peripheral centres, and, finally, that there should be beds for long-stay cases in institutions. That is the plan which has been recommended to the Department, and that is the plan which we shall in effect follow.

It is interesting to record that already there are movements going on in various parts of the country—in Manchester, Leeds, Liverpool, Bristol, and in Scotland, as well as, of course, in London. Some of these have been proceeding for a considerable time, and I think the whole outlook is very encouraging at the present moment. It is a matter of great gratification that the Trustees of the Nuffield Foundation have been so wise and so generous as to give no less a sum than £100,000 to the University of Manchester, spread over ten years, to enable a scheme of the kind you have in mind to be brought into effect. That is a really first-class practical effort.

Rheumatism is a great social problem, and as a result it is an economic problem as well. Not only that, but it is a medical problem. There is still a vast amount of work to be done on the subject of rheumatism. We do not even know the cause of rheumatism, and, indeed, my friends in physical medicine inform me that only too often the treatment provided is of a miscellaneous variety. These matters, we think, should be followed out in this plan of centres for diagnosis and research. If we get an organization of that kind I am sure that out of all we learn we shall get certain leads which the more specialist research workers will be able to follow up, and we shall alight upon one or more causes of this social problem. The causation of the disease to a person like myself is most interesting, because, although a great deal can be done to relieve

pain and suffering, the real aim must be the prevention of rheumatism, and until some work is done on the causation we are not likely to get very far on the preventive side.

A problem of this kind cannot be tackled without Government help, and I want to make it perfectly clear so far as my Ministry is concerned that we are going to make rheumatism one of the big problems that will be tackled under the National Health Service. Of course, we can do only what accommodation and staff will permit. No doubt difficulties in this respect will be overcome, but we must have adequately trained staff to deal with the problem.

Then I want to say to the medical profession that if rheumatism is to be properly studied in these centres as I have indicated we must have at any rate a group of young people who are adequately trained in the first instance as general physicians and who, over and above that, have had training in the study of rheumatic diseases up to the point to which we can carry it at the present time. *If young people will come forward and take advantage of the opportunities now available, we can offer them scope in this field of rheumatism. They will be general physicians with rheumatic diseases as their particular speciality.* In addition we need physiotherapists, we need social workers, and other groups of workers, and to those who have ambitions in that direction I say the same thing. If they care to interest themselves in this problem there will assuredly be a place for them in the National Health Service so far as rheumatism is concerned. More than that, the medical student should have

more opportunity during his undergraduate days of studying this great problem of chronic disease, for it is what he will have to deal with so often in his subsequent practice as a general practitioner, and in the past he has had very little opportunity of studying cases of chronic disease.

I wanted to make it clear what the intention of the Ministry is in respect of rheumatism. I wish the Council an even more successful ten years in the future than they have had in the past. All these official schemes for National Health Services and the like will not thrive in the absence of first-class voluntary effort, and if the Empire Rheumatism Council will go on in the same way for the next ten years no one will be better pleased than the Ministry of Health."

Research

In the tenth Annual Report of the Empire Rheumatism Council, Lord Horder said that, acting on the recommendation of the Scientific Advisory Committee, the Council has appointed two whole-time Registrars, whose duty it will be to investigate the factors in the causation of rheumatoid arthritis: in the first instance it has been decided to deal with a token 100 cases. If this preliminary piece of clinical research is promising it is intended to investigate 2,000 cases of the disease. A carefully planned questionnaire and case-note has been prepared by the S.A.C., and this work will make it possible for new facts to be revealed and correlated in connexion with this important group of rheumatic cases.

UNDERGRADUATE WEEK-END COURSE IN RHEUMATIC DISEASES

The first undergraduate week-end course in rheumatic diseases was given by the Empire Rheumatism Council on Nov. 22, 23, and 24 at the British Red Cross Society's Clinic for Rheumatism, Peto Place, London. The inaugural lecture was given by Lord Horder. This was followed by a lecture on specific arthritides, by Dr. K. Stone. Dr. M. B. Ray then gave a survey of the apparatus used at the Clinic, and this was followed by a complete tour of the Clinic and demonstration of hydrotherapeutic treatments.

Saturday's lectures began with one by Dr. W. S. C. Copeman on non-articular rheumatism, followed by Dr. W. S. Tegner on rheumatoid arthritis. A luncheon was then given by the Council at the White House. Dr. W. S. C. Copeman, in the absence of Lord Horder, took

the chair. In the afternoon there was a demonstration and lecture on osteo-arthritis by Dr. E. Fletcher, who was followed by Dr. G. D. Kersley, speaking on ankylosing spondylitis, and by Dr. J. W. Shackle who dealt with laboratory investigations. Miss L. Raftery gave a lecture on the gynaecological causes of low back pain.

On Sunday morning Dr. D. Baker lectured on rheumatism in childhood, and Mr. P. Ascroft on sciatica. In the afternoon Dr. H. Turney spoke on Gout and Dr. F. C. Golding on x-ray diagnosis. The final lecture was given by Mr. W. D. Coltart on orthopaedic aspects of rheumatic disease.

The course was limited to forty undergraduates in their final year, and those attending represented most of the London teaching hospitals.

THE HEBERDEN SOCIETY

A meeting of the Society was held on Dec. 13, 1946.

The Presidential Address

The President, Mr. S. L. Higgs, F.R.C.S., opened his term of office by a short address, in which he said:

"It is indeed an honour to be elected to the Presidential Chair of the Heberden Society. I confess that I felt some diffidence in accepting this office because as a surgeon—a joiner and carpenter of bones and joints—I wondered whether I was the most suitable person to preside over such a learned body. However, I knew very well that you wished to pay a tribute to orthopaedic surgery, and on behalf of my colleagues I thank you, and also for the compliment you pay me in making me your choice. I can assure you that I have the problem of the care of the sufferer from arthritis very much at heart.

"Our Secretary put it to me that I might say a few words on my aspirations in this branch of medicine. I can now look back critically on twenty-five years of work in a general hospital, in a special surgical hospital, in a rheumatism clinic, and in country orthopaedic hospitals and clinics, and hardly a day has gone by without my being confronted with the question of what best to do for some sufferer from arthritis. Did these cases get the best that medical science could provide? I should say not. After consultation, it had to be decided whether the case was primarily "medical" or "surgical"; and, according to which feature dominated the picture, the patient was transferred to the care of a physician or surgeon and to the appropriate ward or hospital. If I were to generalize, I should say that the services of the orthopaedic surgeon were sought too late and often not until deformities had become established; on the other side, I have felt that patients under my care lacked the continuous supervision of a physician. I must also plead guilty to taking over many cases, operating on them and directing their after-care, and then omitting to refer them back to the physician in order that he might assess the value of the surgical treatment and judge for himself to what extent the corrective or reconstructive procedure had benefited the patient.

"Co-operation between physician and surgeon there has been, but team work, no. We must put this right. All those like ourselves who are engaged in the study of the rheumatic diseases are agreed that well balanced team work is essential, and that we must be provided with ample in-patient accommodation, research, after-care, and follow-up

facilities. Already a good deal of spade work has been done, even during the war. Meetings of a Joint Advisory Committee of the Empire Rheumatism Council and the British Orthopaedic Association have been held, and much time and thought devoted to drawing up memoranda, one of which, at any rate, has been sent to the Minister of Health. The period of propaganda is nearly over and the time has arrived to apply pressure. We can expect a good deal of backing, both medical and political, but we must be in a position to present clear-cut plans and we must not rest until we get what we want and what we know to be necessary for the welfare of our patients."

Somatic Pain

Mr. J. H. Kellgren then opened a discussion on somatic pain. He described some of his experimental work on referred somatic pain, which began some years ago in co-operation with the late Sir Thomas Lewis, and which is still in progress. The basic discovery of referred deep somatic pain, from which all other work derives, was described: its segmental distribution had been determined, and the segmental areas on trunk and limbs mapped out by the use of an experimental pain stimulus applied to ligaments and muscles in human subjects. These areas were quite distinct from the dermatomes. Examples were given of the bearing of these fundamental observations on the understanding of some common zones of tenderness in clinical fibrositis, and on their treatment.

Our views on the nature of "fibrositis" are likely to be affected by subsequent discoveries, which Mr. Kellgren next described, of the appearance in these areas of referred pain of deep tenderness and of localized muscular rigidity. It is hoped to publish Mr. Kellgren's opening paper in a future issue of the *Annals*.

Prof. G. W. Pickering developed some of the points raised by Mr. Kellgren, and discussed the nature of the difference in accuracy of localization in the deep and superficial pain systems.

DEFINITION OF PAIN

Dr. W. S. C. Copeman pointed out that pain had not been defined by the preceding speakers and it would seem desirable to try to do so. It had, for instance, always been doubtful whether pain could be considered as the intensification of any stimulus, which in its slighter form need not be unpleasant, e.g. warmth and pressure. Other observers were, however, quite certain that pain was a sensation *sui generis*. The Oxford dictionary defined it firstly as "a punishment or penalty"—which was archaic; and secondly, and fairly safely, as the

sensation one feels when hurt in body or mind. Dr. Copeman said that, as this latter definition suggested, in every pain sensation we could distinguish three separate elements, the hurt, the appreciation of site, and a varied emotional disturbance which resulted from the first two. The proportion in which these elements were combined in any particular case were, however, infinitely variable. This conception of pain as a combination of both physiological and psychological processes was described by Sherrington as "a physical adjunct to a protective reflex" and was now generally accepted in this country. Dr. Copeman recalled the slogan devised by an enterprising vendor of analgesics before the war, describing pain simply as "the physiological cry of a nerve for relief". Needless to say, the vendor in question could provide such relief!

THE PURPOSES OF PAIN

Next Dr. Copeman briefly considered the purpose of pain, not referring to its supposed spiritual value, but to its physiological aspects. Hilton in his great book on "Rest and Pain", published in 1863, had no doubt but that the primary reason for pain was to secure rest for an injured part: "Under disease or injury pain suggested the necessity of, and indeed compelled man to seek for, rest. Every deviation from this necessary state of rest brought with it through pain the admonition that he was straying from the condition essential to his restoration". It seemed obvious that a further important function of pain was to draw attention to injury or disease of which we might not otherwise be conscious. In an acute process the pain tended to be acute and to demand the urgent attention which at that stage was likely to be effective. Rheumatologists were aware that often little could be done for chronic processes associated with less acute pain, although it was essential that they use every effort to relieve it. The doctor-patient relationship was, incidentally, not infrequently upset merely by failure to relieve pain, which when not acute, might to the doctor seem unimportant. To quote a recent annotation in the *Lancet*, however, "If the doctor really had the patient's point of view, would he not be a little less light and airy with regard to pain? The patient knows he *can* 'grin and bear it' if necessary, but he asks that this sacrifice of his comfort shall be justified". It has been said that pain anchors the patient's thoughts to his disease, but it is really the thoughts of the doctor who is treating the disease which should be so anchored!

THE INTERPRETATION OF PAIN

In most cases of rheumatic disease pain was the presenting and often the only symptom. It was, said Dr. Copeman, the rheumatologist's function accurately to analyse its nature and cause, and so proceed to a diagnosis of the type of physical derangement present. It was, therefore, essential to be aware of modern conceptions of the origin, nature, causes, and effects of pain both in theory and in practice. Practice has been much helped by theory in this matter, as Dr. Kellgren and Prof. Pickering had shown, and their description of the "trigger points" in fibrositis, from which pain might be referred extensively to a distance, was the first scientific landmark in that branch of rheumatology. The next step, in which we were at present engaged, was to ascertain the morbid anatomy and nature of these "trigger points". It seemed to Dr. Copeman that the pathological process behind much pain of the non-articular variety was a local increase in cell tension

which occurred for some reason in the soft tissues and which reached its extreme form in those cases (which he had previously described) of actual herniation of the swollen fatty tissue through its fibrous covering in certain cases of lumbago and backache. Pain from this cause was indistinguishable from deep pain of other types.

"PSYCHOGENIC PAIN"

A question which was occupying much thought at present was the rôle of "psychogenic" pain in rheumatism. By this was meant pain for which no organic basis could be found. It was Dr. Copeman's belief that if the search were thorough an organic cause could in fact generally be found, and that rheumatic pains of a purely functional nature were the exception. This was not to deny, however, that the temperament of the patient was a modifying factor and would affect the distribution and nature of organic pain. It was generally agreed that the interpretation and evaluation of painful sensations was the function of the higher centres, and it might, therefore, be appreciably affected by psychical or emotional forces. Halliday went further and regarded the pains in non-articular rheumatism as being external somatic manifestations of mental tension or frustration. He thus postulated a direct personality-type association with this form of disease, and this view had proved attractive to many physicians in view of the paucity of objective physical signs. To test this hypothesis Copeman and Pugh had carried out a personality assessment on a series of 100 service patients suffering with severe fibrositis, and their finding was summarized as follows: "We are unable to assign a causative rôle to any mental factor in these cases, although fatigue and anxiety connected with battle were frequently met with and seemed to be connected with the progress of the disease. . . . No one personality type was predominant amongst them, but elaboration and prolongation of symptoms was generally seen as an escape mechanism in patients in whom evidence of an hysterical overlay was found . . . and the treatment in these cases was correspondingly less favourable than in more stable personalities."

PAIN AS A GUIDE TO DIAGNOSIS

Dr. Copeman reaffirmed his view that pain properly assessed stood pre-eminent amongst the sensory phenomena of disease as a guide to diagnosis, although, as Ryle had pointed out, our understanding of its nature and mechanism remained still peculiarly limited. Further advances in the study of rheumatism were likely to be won by accurate clinical observations on this symptom. The study of pain in the experimental animal was difficult, and so did not commend itself to the laboratory worker. This further study must, therefore, devolve largely upon observant clinicians who were keenly interested in the subject—a subject which, Dr. Copeman suggested, pre-eminently concerned members of the Heberden Society, who might themselves advance knowledge in this field.

FATTY HERNIAE AND TRIGGER POINTS

Dr. Kersley followed up Dr. Copeman's remarks on the possible significance of the fatty herniae first described by him in producing trigger points for the production of pain. He stated that, in approximately half the biopsies performed at the Royal National Hospital at Bath on cases where tender nodules were palpated in fibrositis, such oedematous fat lesions had been found. In the remaining cases, although an attempt was made to transfix the nodule before the skin was incised, the

lesion seemed to disappear completely under anaesthesia. Dr. Kersley suggested that this might support Elliott's theory of local spasm of muscle fibres being a cause of pain frequently diagnosed as fibrositis but which could originate as the result of many causal factors.

Dr. Alan Stoddard said that, although fibrositic trigger points might well be referred sites of tenderness

from a cause more centrally placed, yet pressure over tender fibrositic nodules frequently gave rise to referred pain, which pain could be relieved at least temporarily by local anaesthesia; therefore the fibrositic nodules themselves were the cause of these pains. Dr. Stoddard also asked what part the sympathetic nervous system played in the production of somatic pain.

INTERNATIONAL SOCIETY OF MEDICAL HYDROLOGY

A number of distinguished foreign visitors to this country attended the first annual meeting since the war of the International Society of Medical Hydrology, which was held at Buxton from October 4 to 6 last. Among those present were Dr. Loring Swaim and Dr. Abraham Cohen from the U.S.A., Dr. V. Ott of Zurich, Dr. P. Petit from France, Dr. J. Michez of Brussels, Prof. F. Lenocho of Prague, and Dr. J. van Breemen from Holland.

The following officers were elected for 1946-47: president, Lord Horder; chairman of council, Dr. J. B. Burt; vice-chairman, Dr. G. D. Kersley; hon. treasurer, Dr. Frank Clayton; hon. secretaries, Prof. Frantisek Lenocho and Dr. Donald Wilson; thirty-nine new members and five associates were elected. Arrangements for renewing the publication of the society's journal were discussed.

Lord Horder, in his presidential address, said that interchange of friendship and ideas amongst medical men of all countries would be a most important factor in restoring international relations.

Dr. van Breemen discussed infection, constitutional anomalies, abnormalities of peripheral circulation and of the skin, and social and environmental influences, in relation to medical hydrology. Dr. Ott gave an interesting description, published at p. 206 of this issue, of Swiss research work on the effects of thermal treatment on the autonomic nervous system.

Dr. Abraham Cohen described the use made, at the Philadelphia General Hospital, of physostigmin in the

relaxation of muscle spasm. He said that physostigmin salicylate was as efficacious as prostigmin, and was less expensive and less toxic. At the Philadelphia General Hospital, in-patients with arthritis were given injections of isotonic saline daily for a week. If these, together with complete rest, produced no improvement, hypodermic injections of atropine (0.06 mg.) was given daily, also for a week. If there was still no improvement, physostigmin was given with atropine mixed in the same syringe, beginning with 0.06 mg. of each. The dosage was adjusted according to the side-effects produced on the autonomic nervous system of individual patients, and the two drugs were given for about six weeks. The best results were obtained in rheumatoid arthritis with severe spasm. Dr. Cohen said that the treatment was not a cure but it might produce considerably amelioration of symptoms, particularly relief from pain. Among other conditions in which good results had been obtained were spasm due to war wounds and other traumata, Feltz's syndrome, and paralysis from nerve injuries.

Dr. Loring Swaim discussed American ideas on the treatment of chronic rheumatism, and particularly emphasized the physician's responsibility in reorientating the patient. Dr. R. B. Whittington of Manchester discussed the correlation between the plasma viscosity of the blood and the erythrocyte-sedimentation rate, and gave evidence to show that the former was the better guide to the progress of various diseases.

LIGUE INTERNATIONALE CONTRE LE RHUMATISME

BRITISH BRANCH

The Scientific Advisory Committee of the Empire Rheumatism Council has been asked to re-start a British branch of the Ligue Internationale contre le Rhumatisme, and they have appointed a sub-committee to act as executive for this purpose.

A European branch has been formed and is holding its first Congress in Copenhagen in September; and an American branch, sponsored by the American Rheumatism Association, has also been formed. The first Congress of the whole Ligue will be held in the U.S.A. in 1949, though members are, of course, welcome at any of the branch congresses.

A meeting of the British Executive Committee has been held and the following officers were elected: Dr. W. S. C. Copeman, Chairman and National Representative; Dr. G. D. Kersley, Treasurer; Dr. Oswald Savage, Secretary; Drs. B. Schlesinger and W. Tegner, members.

It was decided that the *Annals of the Rheumatic Diseases* should be the official Journal of the British Branch of the Ligue, this Journal having already been adopted as the official organ of the American branch.

The subscription for members was fixed at one guinea, this subscription to hold good for the year September, 1947-48 (i.e. dating from the first post-war congress). The Treasurer, Dr. G. D. Kersley, 6 The Circus, Bath, would, however, be glad if members would send their subscriptions to him, when they enrol, in order to avoid the need for extra correspondence for all parties concerned.

The British Committee of the Ligue are anxious to set the British branch on a firm financial footing, and to enrol members who are really interested in the welfare of the speciality and who will reflect honour on the British branch. Any would-be members are asked to apply to the Hon. Treasurer.

FIRST CONGRESS OF THE EUROPEAN BRANCH

The First Congress of the European Ligue Internationale contre le Rhumatisme will be held in Copenhagen from Wednesday, Sept. 3, to Saturday, Sept. 6, 1947. The President of the Congress is Prof. Cai Holten, and the Vice-President, Prof. E. Jarlov; Honorary Presidents include a representative from each of the countries participating in the congress. The Congress Committee is composed of the Chairman, Professor Cai Holten; the Secretary General, Chief Physician G. Edström; the Treasurer, Director Ove de Bornemann; and the Corresponding Secretary and leader of the Congress Bureau, K. Kalbak. The address of the Congress Bureau is Rigsforeningen til Bekaempelse af de reumatiske Sygdomme, Rysenteensgade 16, Copenhagen V, Denmark.

The scientific lectures are to be divided into the following groups: (1) the aetiology and pathogenesis of arthritis, especially with regard to streptococci; (2) electrodiagnosis and electrotherapy; (3) the social importance of the rheumatic diseases; (4) climatotherapy and treatment with hyperpyrexia; (5) free lectures. The speaking time is to be limited to twenty minutes for each lecture, and the official languages will be English and French.

A typewritten résumé of any lecture to be delivered should be received by the congress bureau before April 1, 1947. The résumé will be sent to the congress members before August 1, 1947, together

with the final programme for the congress, probably as the first issue of the new *Acta Rheumatologica*.

A preliminary programme has been made up as follows. A reception of the congress members, with ladies, a social gathering, and visit to the Tivoli, will take place on Wednesday, September 3. The following day, at 9 a.m., the congress will be opened, and from 9.15 to 12 there will be lectures on the aetiology and pathogenesis of arthritis, especially with regard to streptococci. The afternoon session will be devoted to electrodiagnosis and electrotherapy, and at 7 p.m. there will be an official banquet (evening dress). The social importance of the rheumatic diseases will be discussed on Friday morning, September 5, and in the afternoon there will be free lectures.

On Saturday, September 6, the congress will be held in Lund (Sweden). The congress members will go by boat from Copenhagen to Malmo, and by car from there to Lund. The morning session will be from 11 a.m. to 2 p.m., and will be devoted to climatotherapy and treatment with hyperpyrexia. After lunch there will be arrangements for sight-seeing, and at 7 p.m. there will be a closing banquet in Malmo (day dress). Delegates will return to Copenhagen at 10 p.m.

Reservation forms may be obtained from the Empire Rheumatism Council, Tavistock House North, Tavistock Square, London, W.C.1, to whom they should also be returned.

BOOK REVIEWS

Medical Disorders of the Locomotor System. By Ernest Fletcher, M.D., M.R.C.P. 1947. E. and S. Livingstone, Ltd. Edinburgh. Pp. 625. Price 45s.

The sub-title of this book states that it includes the rheumatic diseases; it is a most important contribution to the literature of the subject, and appears, moreover, at a time when interest is focused on the study of chronic rheumatism to a greater extent than ever before. In addition to the author's own work, it contains valuable chapters by nine leading authorities on different aspects of the subject. In contrast with some other large works on rheumatic diseases, it does not merely present a survey of the literature and an account of the work of others, but it also gives an account of the personal experience and observations of the author, and this adds materially to its value.

One of the opening chapters on the clinical examination of the patients will be found very helpful, especially to those working in rheumatic clinics, but the general practitioner will hardly be able to spare the time in a busy practice to carry out the system advised, valuable though it is. The section on incidence and prevalence of these diseases, based on many official reports, shows a classification resulting from a somewhat narrow experience of the nature of different classes of work; for instance, miners and quarrymen are grouped together despite the very great differences in the conditions of occupation; miners work in a warm atmosphere, and are only affected by weather on emerging from the pit, while quarrymen are more exposed to the weather than any other group except agricultural labourers and their work entails physical strains of a different character. In spite of its importance, the influence of hot surroundings such as are experienced by stokers, blast furnace men, and the like is not considered.

The author's experience of the incidence of ankylosing spondylitis between the sexes is in striking contrast to that of others; comparison is made with Buckley's figures, which show a relative incidence of 10 cases in males to 1 in females, while the author's experience showed, in an early series, 32 females in 68 cases, and, in a later one of 22 cases, only 4 females; these figures are in even more striking contrast to those of Boland and Present, who give the relative incidence in American military hospitals as 20 males to 1 female; but it is to be noted that these figures are influenced by the fact they are based on military practice. Whether this disparity is due to a difference in incidence in southern England from that in the north or the U.S.A., or to a different basis for diagnosis, is a

matter of importance; but it may be that the practice of regarding slight radiological changes in the sacro-iliac joints as proof of ankylosing spondylitis is in some measure responsible, and the observations of Rogers and Cleaves (1935) on sacro-iliac epiphysitis are worthy of consideration in this matter.

Consideration of the importance of septic foci in the aetiology of joint disease shows a remarkable diversity of opinion, and in a series of cases in which improvement followed the removal of such foci the highest percentage was found in gout, which may throw a fresh light on the pathology of that disease. A chapter on applied anatomy by Prof. G. A. G. Mitchell of Manchester University supplies much information of service in diagnosis and management of joint disorders, and deals also with the mechanics of movement and the distribution of the spinal nerves. The common abnormalities and their possible effects are fully described. The physiology of joints is also fully dealt with. Fibrositis is the subject of an exhaustive survey by Dr. W. S. C. Copeman, who describes the many advances which have been made in this difficult and hitherto little understood aspect of rheumatic disease, and the various lines of treatment. Dr. Donald Hunter's chapter on the medical diseases of bone supplies much information of interest and value not readily available.

The many problems presented by sciatica and brachial neuralgia are dealt with by the author in a very thorough manner, and a chapter on backache and the spine describes many conditions which are often obscure and difficult to diagnose. The section on laboratory findings supplies information on the sedimentation rate which would be of more value had other methods than that of Westergren been more fully described: a recent annotation in the *Lancet* illustrates the importance of this. Insufficient weight appears to be attached to anaemia, which in the opinion of the reviewer is an important factor both in predisposing to arthritis and in its treatment.

Osteo-arthritis, which is often dismissed in few words as outside the range of effective treatment, is exhaustively described both in respect of the spine and the limb-joints; this chapter is by the author, who has done much important work on this difficult problem. There are many other special chapters deserving of mention did the limits of a review permit. Treatment in general receives full attention and much useful and practical advice is given. The section on gold therapy is sound and well-balanced, Physiotherapy, the application of plasters, orthopaedic measures, and surgery are all adequately dealt with.

The book is well printed and lavishly illustrated; and though the price is high which is inevitable in these days, the investment will be found well worth while; it can be strongly recommended to all who are concerned with the study and treatment of rheumatic diseases.

C. W. BUCKLEY.

Conferences Cliniques de Rhumatologie Pratique.

By François Francon. 1946. Vigot Frères. Paris. Pp. 386. No price given.

More than a quarter of a century has passed since Dr. François Francon started to practise in Aix les Bains. He is Vice-President of the French Ligue Française contre le Rhumatisme, a research worker, and a physician whose interests have embraced the social as well as the clinical aspects of his chosen subject, rheumatism.

This new book, written primarily for the general practitioner, is practical in its outlook. From among the diverse conditions that may be included in the term "rheumatism" he has taken certain fairly well-defined clinical pictures and, in simple terms, described their main clinical features and pathology, and detailed the treatment that his rich

and varied experience has taught him to consider as the best available. Unlike many French authors he has read widely, and is familiar with, the work of his British and American colleagues. All who are interested in the rheumatic diseases will learn something from his description of rheumatism affecting the shoulder, and of brachial neuritis and stenosing tenosynovitis. His description of Looser's syndrome, with its diffuse pains, paraesthesiae, and crippling, the multiple fractures seen in the radiographs, and the rapid clinical improvement that follows rest, adequate diet, calcium gluconate, vitamin D, and irradiation with ultra-violet light, is based on a larger series of patients than anyone has studied in this country. The author discusses without bias the indications for spa treatment, and the part that the spa can play in the treatment and prevention of the rheumatic diseases. In brief, in this—his latest—book, Dr. Francon has given of his best; he has discarded that which his clinical experience has led him to believe to be of little value, and has set an example which might be followed with profit by some of those who are writing, or have a yearning to write, a book on rheumatism.

FRANCIS BACH.

NUFFIELD MEDICAL FELLOWSHIPS FOR ADVANCED TRAINING IN CHRONIC RHEUMATISM

The Nuffield Foundation is prepared to award a few fellowships to enable some suitably qualified medical men and women to obtain advanced training in chronic rheumatism. So far as possible, the amount of any award and the conditions attached to it will be adapted to the need of the recipient having regard to the purpose for which these fellowships are offered. Normally the annual value of a fellowship will be between £500 and £800. In the event of a Fellow being required to travel abroad to obtain special experience or study facilities, the Foundation will pay the travelling expenses involved in addition to the award. A fellowship will be awarded for one year, but may be renewed for a second.

Fellowships will be open to men or women who are British subjects holding a medical qualification registrable in the United Kingdom, and who are normally resident there and who desire to specialize in the diagnosis, treatment, and study of chronic rheumatism. Candidates must have spent at least one year since qualification in the general medical practice of a hospital, and preferably should hold

the M.R.C.P. diploma. A Fellow may not hold any other award concurrently with his fellowship without the permission of the trustees of the Foundation.

Fellows will be required to carry out, at institutions approved by the trustees of the Foundation, a programme of work and training similarly approved. Other work, paid or unpaid, may not be undertaken without the permission of the trustees. A Fellow will be required to submit to the trustees, at the end of each year's tenure of his fellowship, a report on his work during that year. Should the trustees at any time find that a Fellow neglects or has neglected the obligations of his appointment, they shall have power immediately to terminate his fellowship.

The Foundation is prepared to receive applications at any time. Medical officers at present serving with the armed or auxiliary forces of the Crown may apply for fellowships tenable on their release from such forces.

Forms of application are obtainable from The Secretary, Nuffield Foundation, 12 and 13, Mecklenburgh Square, London, W.C.1.

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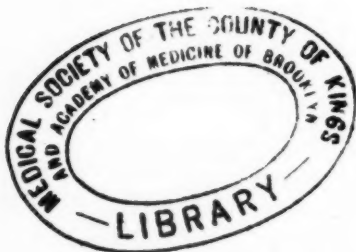
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